AUGUST 31, 1929

Railway Age

Founded In 1856

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Railway Age

With which are incorporated the Railway Review, the Railroad Gazette and the Railway Age-Gazette. Name Registered U. S. Patent Office.

Vol. 87 August 31, 1929 No. 9

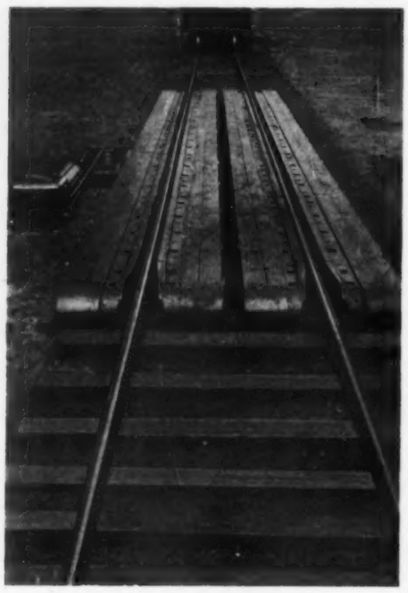
In this Issue

The Railway Age is indexed by the Industrial Arts Index and also by the Engineering Index Service

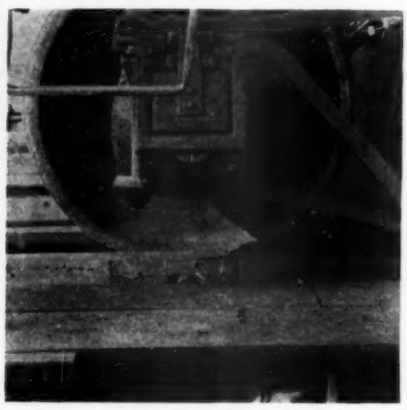
Union Model 28-

Heavy Duty Electro-Pneumatic Car Retarders

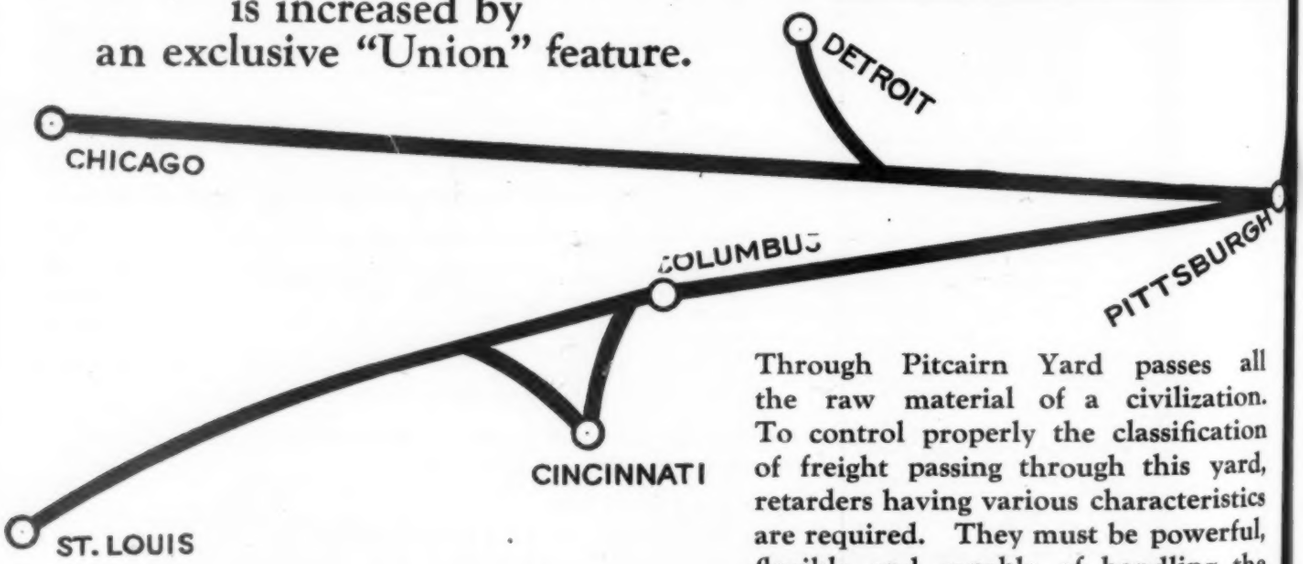
Brake shoe rises when car enters the retarder, and bears on the wheel with increased surface.



Brake shoe down when retarder is opened; thus its movement does not affect clearance.



The powerful grip of the brake shoes is increased by an exclusive "Union" feature.



Through Pitcairn Yard passes all the raw material of a civilization. To control properly the classification of freight passing through this yard, retarders having various characteristics are required. They must be powerful, flexible and capable of handling the heaviest and lightest cars with ease.

Retarders must be swift in operation and instantly responsive to the will of the operator

District Offices

NEW YORK MONTREAL CHICAGO ST. LOUIS SAN FRANCISCO

Railway Age

Vol. 87, No. 9 August 31, 1929 Table of Contents Appears on Page 5 of Advertising Section

The Railways' Contribution to Prosperity

DEVELOPMENTS that have occurred during recent years in this country, and the unprecedented prosperity which they have caused, may well give economists, statesmen and business men an enlarged appreciation of the importance of adequate, dependable and speedy transportation. Excepting in a few industries prosperity has prevailed since 1922, and it is greater now than ever before. The gain in the net income of 600 industrial corporations in the first half of 1929 averaged 23 per cent, and in most cases this gain was made over a net income that already, within recent years, had largely expanded. It is significant that prosperity has prevailed and has been increasing for about seven years, and that throughout this period the railways have been rendering a freight service that has not only been adequate but that has been constantly increasing in dependability and speed. Prosperity has not made railway service good, excepting to the extent to which the railways have participated in it. Good railway service, on the other hand, unquestionably has been one of the principal causes of the long period of unprecedented and increasing prosperity.

Effects of Transportation Shortages

It is worth while to recall what occurred previously to this recent period, because the contrast throws light on the railroad problem, and on all our other important economic problems. The nation was highly prosperous in the decade that ended in 1907. The railways participated in this prosperity and rapidly expanded their facilities, but traffic grew so fast that they failed to keep up with it, and there were serious car shortages in the latter part of that decade. The sharp and severe "rich man's picnic" of 1907 brought that period of prosperity to a close, and the shortage of transportation undoubtedly was one of the causes of the panic. The alleged "excessive" prosperity of the railways, car shortages and abuses in the railway business aroused a public sentiment which caused unintelligent and drastic regulation to be adopted. In spite of this the rapid expansion of the railways was soon revived and continued for some years; but after 1911, when the Interstate Commerce Commission, in a period of rising prices and wages, refused to permit a general advance in rates, railway expansion rapidly declined. During the five years 1916 to 1920, inclusive, there was a large increase in traffic with which the railways were unable to deal satisfactorily. Car shortages were chronic. Business concerns feared they would be unable to get freight when they wanted it, and built up large inventories. Wages and prices increased greatly. The available supply of credit finally became wholly unequal to the demands, and in the latter part of 1920 business collapsed and there was a headlong decline of prices. General business began to recover in the latter part of 1922, but its recovery was seriously hindered by a big car shortage, which was due to the inadequacy of railway facilities and to the shop employees' strike, and which lasted from the end of August, 1922, to the middle of May, 1923.

Railway Service, Inventories and Prices

The history of railway service and of general business developments and conditions since then has been wholly different from what it was for years before. Surpluses of freight cars have been reported ever since, and since 1923 the smallest surplus reported at the time of peak movement of traffic in the fall of any year has been about 78,000. Not only have shippers been furnished all the cars they have wanted, excepting in a few minor instances, but the regularity and speed of freight movement have been greatly increased. In 1923 the average freight train contained 40 cars, and moved 10.9 miles an hour. In 1928 the average freight train contained 48 cars, and moved 12.9 miles an hour. Thus far in 1929 the average freight train has moved more than 13 miles an hour. These improvements in freight service have been accompanied by large reductions in inventories carried by business concerns, and by a remarkable stabilization of commodity prices in general.

The stability of commodity prices within recent years has been a condition which few economists anticipated. Prices were advancing before the war, and fluctuated enormously during the war. In spite of the great decline that occurred in 1920 and 1921 they averaged 54 per cent higher in 1923 than in 1913. Their level was then so much higher than before the war, that further wide fluctuations, or a large decline, seemed probable, but they have been as stable since 1923 as during any equal period before the war, the principal fluctuations having occurred in the prices of farm products. The highest level reached by wholesale prices since 1920 was in 1925, when they averaged 58.7 per cent

more than in 1913, and the lowest level they have reached has been in 1929, during which thus far they have averaged about 46.3 per cent more than in 1913.

It would be difficult to exaggerate the economic importance of small inventories and stable prices. Reductions of inventories not only reduce the cost of conducting business, but, by releasing capital that would otherwise be inactive, produce the same effects as an equivalent increase in the total capital of the country. Stable prices enable business men to make plans with reasonable certainty that they will be able to carry them out with profit. They favor those who rely for success upon good management, increased efficiency and reduced costs of operation, as compared with the speculators who try to make their profits largely by anticipating changes in prices.

The contribution that more adequate, dependable and speedy railway service has made to the reduction of inventories it quite generally recognized and appreciated. Much less has been said regarding the contribution it has made to the stabilization of prices. It is quite evident, however, that if the price of a commodity begins to decline the surest way to stop the decline is to curtail the production and reduce the shipments of it, while if it begins to advance the surest way to stop the advance is to increase the production and shipments of it. What is true of one commodity is true of all. An absolutely essential factor in this process of constantly adjusting supply to demand is a system of transportation which can be relied upon to handle all the freight offered to it at any time, and handle it quickly. If the available means of transportation are inadequate or unreliable, the producer must ship when he can get transportation, largely regardless of market conditions, and the wholesaler or retailer of commodities likewise must buy them largely regardless of market conditions and carry unnecessary quantities of them in stock lest he may not be able to get them when he needs them. The closer is the adjustment of the supply of commodities to the demand for them the smaller will be the fluctuations of prices, and of all the influences which have contributed toward effecting this close adjustment within recent years no other probably has been as important as the character of the service rendered by the railways.

Low Rates or Good Service?

There has always been discussion as to whether low freight rates or good freight service would contribute more to the prosperity of the country. The experience of the last 20 years should answer that question. For a long period after effective regulation was adopted the shipping public and regulating authorities put almost all their emphasis upon rates. The result was that the net return earned by the railways declined, that the improvement and enlargement of their facilities was reduced, and that for years the country had poor railway freight service. In consequence, there were frequent serious maladjustments in the demand for and the supply of commodities, and the efficient functioning of the entire industry, commerce and finance of the country was interfered with. Without the kind of freight service now being rendered by the railways the present efficient functioning of industry, commerce and finance, and the consequent extraordinary prosperity would be impossible.

Under modern business conditions it is plain that the answer to the question as to whether the level of rates or the character of railway service is the more important is that the producing and consuming public cannot afford not to pay whatever rates are necessary to enable the railways to prosper and render good service, because low rates will contribute a great deal less than nothing to the prosperity of the country if the price that must be paid for them is a service which, in point of adequacy, reliability, or speed, is not fully equal at all times to the demands of industry and commerce.

Rail Motor Car Operation

WHEN rail motor cars are installed on a railroad not previously using them, or on a portion of a railroad where their use is novel, there is always a certain amount of opposition to overcome. In general, they supplant steam power on local or branch lines. These runs are desirable from the employees' point of view, particularly the older men, since they usually permit the employee to be home every night and it is these older men who are least ready to accept new ideas or methods.

It has been the general experience that their doubts are dispelled eventually, and that in most cases the crews become enthusiastic adherents of rail motor cars, once they are accustomed to them. Manifestly, however, during the period of transition, while the crew is still doubtful, much efficiency in performance is lost.

Several roads with comprehensive motor car operations have found it worth while to eliminate this period of doubt. Before the cars are installed supervisors ride with the crews to be affected by the change. They explain to them the conditions making it necessary to supplant steam with rail motor cars, and also point out the advantages of motor car operation.

On the Canadian National and the Boston & Maine motor car assignments are made only after a comprehensive survey of the field, and the results of this survey are made known to the officers and men. Following this, the actual operations are checked closely. Each motor car operator is given a daily report of the performance of his car, and periodically he is given a statement showing the comparative performances of other motor cars and his own. Copies of these reports are, of course, given also to the supervisors. In this manner interest and rivalry are created, which, on the two roads mentioned, at least, have resulted in efficient operation.

The Proposed Report on Accounting Revision

THE Interstate Commerce Commission has made public a proposed report by Commissioner Eastman in the general accounting revision case, *Ex Parte 91,* which is abstracted on another page in this issue. The specific changes advocated in this report are neither startling nor far-reaching—but one of the Commissioner's recommendations is both. That is the proposal that a committee be appointed by the commission from representatives of the railroads, the state commissions, the National Industrial Traffic League, the Taylor Society and the commission itself to study the question of cost accounting and to report its conclusions to the commission "at as early a date as is consistent with adequate research."

This proposal, if approved, would simply mean that the commission, after having given the advocates of cost accounting every opportunity to present a specific, workable plan for such accounting, which they failed to do, now would virtually offer to keep open the record indefinitely for these interveners. Do not the railroads and the accounting officers, who have so ably represented their interests in this case during the past few years, now deserve a respite?

The cost accounting advocates failed in the present record to present in anything but the barest outline a proposed cost accounting system, leaving unsettled a multitude of practical questions in connection with it. Apparently, therefore, one of the principal duties of the railroad and commission representatives on the committee proposed by Commissioner Eastman would be the laborious and unprofitable task of instructing non-railroad men in the fundamentals of railroad accounting problems and procedure. If the outside protagonists of cost accounting wish to foist their theories on the railroads should they not at the very minimum be required to work their plan out to the last detail, procuring at their own expense the expert assistance needed to adapt their proposals to railroad conditions?

The general idea of these interveners has already been presented to the commission. If there is any merit in the idea the commission has on its payroll accountants familiar with railroad conditions who can work out a tentative plan for applying this general theory in detail to railroad practice. What then is to be gained by withholding a definite "Yes" or "No" on cost accounting, unless these interveners can give assurance that they have unquestionably valuable new contributions to make to the record—contributions which will get beyond mere theories and rough outlines and present detailed workable plans, drawn up in the light of a full consideration of practicability under railroad operating conditions?

The railroads, of course, could not object to the commission's continuing to study the subject of cost accounting as much as it likes. It has a Bureau of Accounts which could be instructed to continue to collect information on the subject and to endeavor to make specific applications of the general theory to railroad conditions. But does the likelihood of valuable results from such study at a reasonably early date justify the appointment of a formal committee such as Commissioner Eastman advocates? Should changes now be made in accounting practice with the idea of making still further and more sweeping changes a few years hence? For the sake of comparability, accounting methods should not be changed with unnecessary frequency. If there were strong hopes that the proposed committee might make some valuable contribution, then revision ought to await the committee's report. If no such hope exists, then ought not the railroads have the assurance that when the present recommended changes are made, their accounts will be free from major revision for a reasonable period of years? The appointment of this committee would suggest the likelihood of an entire upset in the revised classification before it had been used long enough to develop real comparisons.

Examiner Ames' Report on Container Service

ATTORNEY-EXAMINER Harry C. Ames has made a customarily thorough report to the Interstate Commerce Commission on unit container operation and his recommendations are summarized on another page in this issue. In brief, he expresses the belief that the flat container-mile rate is not properly based—that a rate similar to third class rates would be more appropriate, with a proviso that in any event the container lading should carry the rate of the highest class of shipment it contains and that the container rate should never be on a lower basis than the carload rate. He expresses approval of the basic idea behind container operation, but holds that service should not at the present time be extended beyond Eastern territory.

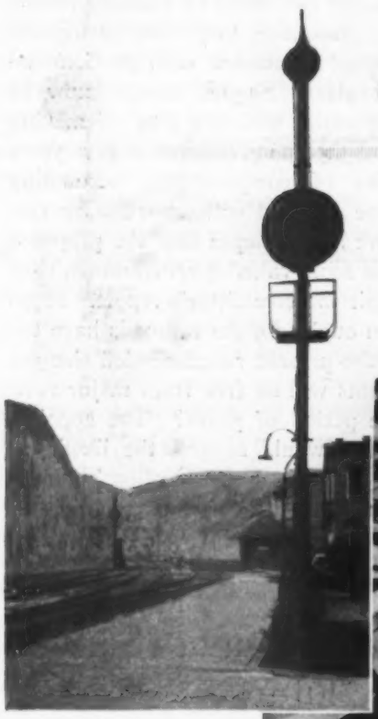
If the Commission should adopt his opinion, it would seem that the container may enjoy a thorough trial, but that features which involve rate complications will be eliminated. The recommendations give the advocates of container service a part of what they sought, while they remove in large part the objections of the opponents of the service. In this day of rapid change in transportation practices, the opening of the door to experimentation must be welcomed. At the same time the opponents of the container-mile rate will be glad to see that experiment at the expense of the class rate structure is not recommended. Students of the newer forms of transportation and of ways and means of meeting their competition, as well as those whose primary interest is in railroad transportation *per se,* will find much of value in the opinions, and supporting comment, expressed in this report.

Baltimore & Ohio

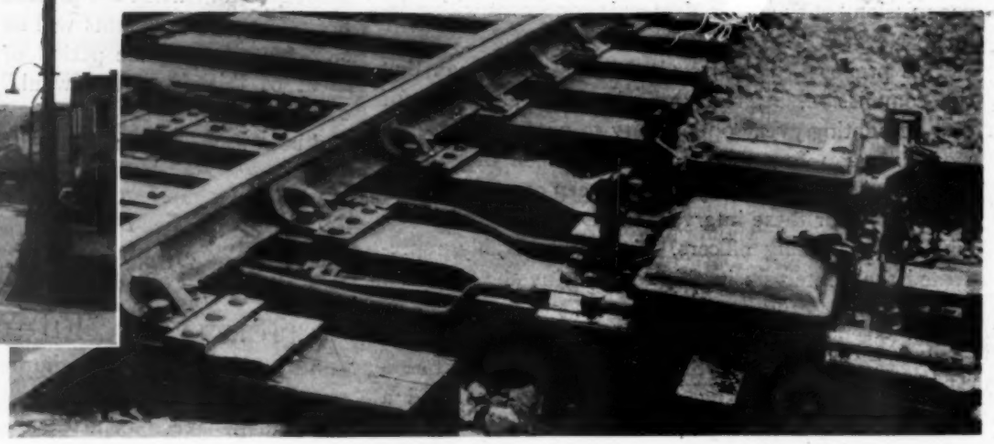
Operates Trains by S

Installs remote control power switch to direct the train movements

By G. H.
Signal Engineer,



Looking East at Salem



Typical Switch Machine

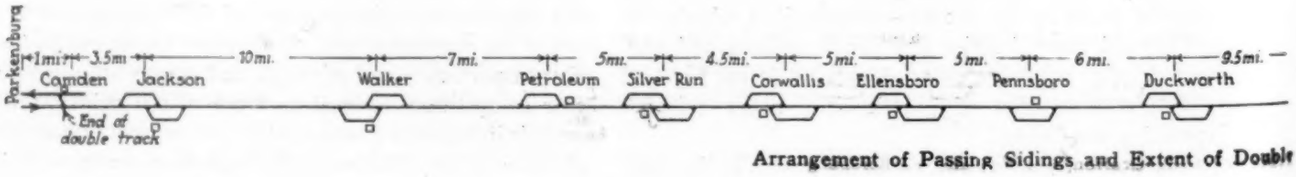
THE Baltimore & Ohio has recently completed a system of signaling and remote control power switches on a complete division between Grafton, W. Va., and Parkersburg, a distance of 102 miles, of which 89 miles is single and 13 miles is double track. Between these limits all train movements are being directed by signal indication without written train orders, and train stops to enter or leave the passing track switches are eliminated. All signals are the color-position-light type, and the switch machines are electrically operated. The system is controlled from desk-lever machines located at 16 points along the division, principally at existing interlockings or important telegraph offices. The installation was constructed by signal department forces of the Baltimore & Ohio.

Track Layout and Physical Limitations

Extending westward from Grafton to Rosemont, there is an 11-mile section of double track which is signaled for regular movements on the right-hand track. Through Clarksburg there is a two-mile section of double track between interlockings "MO" and "J"; likewise there is a one-mile section of double track from Camden into the yard at Parkersburg. The remainder of the division is single track, with lap siding layouts at 11 stations and single sidings at 3 other stations, as shown on the track plan. At the ends of double track and at all passing siding inlets or outlets, interlocking is provided, each interlocked switch being protected by signals near the fouling point.

Division Traverses Mountainous Section

This division traverses a mountainous section of West Virginia with numerous curves, grades and tunnels. The ruling grades vary from 0.96 to 1.47 per cent. There are 23 tunnels on this division, varying from 300 to 2,710 ft. in length, the longest being located near Clarksburg, W. Va.



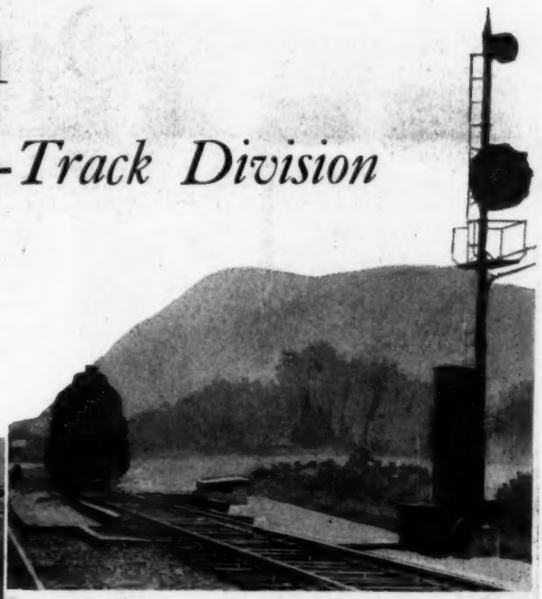
Arrangement of Passing Sidings and Extent of Double

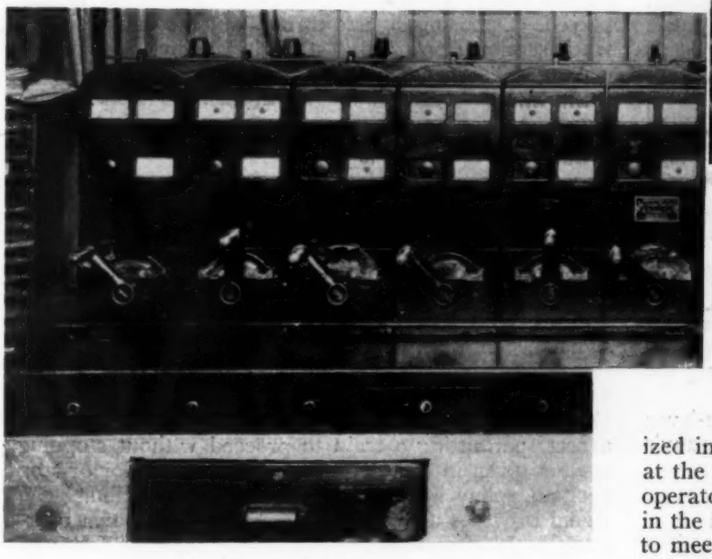
Signal Indication

On Single-Track Division

machines on passing tracks, with signals without written orders on 102 miles

Dryden
Baltimore & Ohio





Above—Westbound Train Heading Out of Siding at Salem
Left—Section of Table-Lever Machines in a Control Station

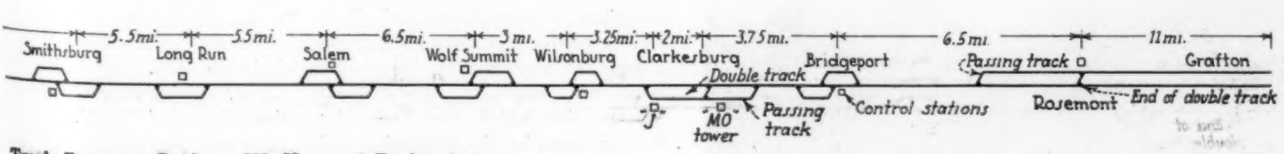
This division is a part of the Philadelphia-Cincinnati main line and handles nine passenger trains each way daily, including the National Limited, while the freight traffic includes approximately 11 trains each way daily. Approximately 40 trains are, therefore, operated over this line daily. The through passenger trains are scheduled to traverse the 102 miles in about 3 hr. 7 min., and the through freight trains in about five hours.

The Control System

All train movements are directed by signal indication without written train orders. When an approaching train operates an annunciator in a station, the operator informs the dispatcher, who then directs the operator to allow the train to proceed on the main track, or to take siding. The control system is therefore, centralized in that the dispatcher directs each movement, yet at the same time the system is very flexible in that the operator has direct control of the switches and signals in the immediate layout, and can operate these facilities to meet the existing requirement without delay. Likewise, in lining up the signals to direct a train movement from one station to another, the dispatcher issues instructions that the move is to be made, but the two operators must co-operate in the operation of the locking features in order that the proper signal will be displayed.

Highest Degree of Protection Provided

This system of control was installed on this division because it provides the highest degree of protection, and is similar to previous installations made on the Baltimore & Ohio system. The majority of the stations where the control machines are located were existing interlocking plants or important block offices. This installation, combined with its remote control of all passing siding inlets, outlets and ends of double track, is part of the program of expenditures to increase safety and track capacity, and also to reduce operating costs. It provides a means for keeping trains



Track Between Grafton, W. Va., and Parkersburg

View Looking East at Salem with a Color-Position-Light Dwarf Signal in the Foreground

moving at closer intervals, thus avoiding stops caused by the issuance of orders, and materially reducing the number of train hours.

The switches and signals are controlled by table-lever interlockings of Union Switch & Signal Company's manufacture, a 7-lever unit being required at a single passing siding, and a 12-lever unit for a double passing siding. These interlockings are equipped with switch, signal and traffic lever control at each station. The switch and traffic levers operate in two positions. The signal levers are in the central position normally, and operate to the left for trains in one direction and to the right for trains in the opposite direction. The short traffic levers must be moved prior to the clearing of signals which govern within passing siding limits. These levers are equipped with electric locks, arranged to lock them in either the normal or reverse position. The reversal of a signal lever, governing trains in one direction, locks the short traffic lever normal, while the reversal of a signal lever governing over the same track in the opposite direction, locks this lever reversed.

Color-Position-Light Signals on Double Track

The long traffic levers, which govern over the single-track section from the outlet at one station to the inlet at the next, are electrically locked in the normal position only; they are operated prior to the clearing of a so-called head-block signal, and must be unlocked by the operator at the next station. These levers are also controlled through track circuits and therefore, cannot be unlocked unless the opposing head-block signals are at stop, all track circuits between being unoccupied and the traffic lever at the next tower being normal.

Automatic signals spaced from 5,000 to 6,000 ft. apart are located between opposing head-block signals to insure proper spacing of following trains. These automatic signals are controlled on the A.P.B. principle, added to which are special circuits for the control of the "stop and proceed" indication, the arrangement being such that for a train following another into an occupied block, a "stop and proceed" indication is displayed. Opposing signals throughout the entire single-track section display the "stop" indication. Trains receiving a "stop and proceed" indication are governed in the same manner as in double-track territory. Stop signals cannot be passed except by order of the dispatcher or when preceded by a flagman a sufficient distance to insure protection.

All the signals are the Baltimore & Ohio color-position light type. The high signals are either ground or bracket masts, for the automatics or for interlocking governing movements from main track to main or from main to siding, are of the Union Switch & Signal manufacture, with 8⅜-in. lens. The color-position-light signal provides 14 aspects and is readable by color as far as it can be seen and by position from 4,000 to 6,000 ft. Whenever the stop color (red) or the stop position (horizontal) is displayed, trains are required to stop; aspects permitting a train to proceed without stopping are not given in conjunction with the stop color or stop position. Any light failure creates a restriction. The signal provides a three-arm equivalent, each arm operating in four positions. Any signal, whether home or automatic, may be wired to serve both as a stop and as a stop-and-proceed signal. Each individual color has a corresponding position, and this combination of color and position should in no case be misread.

The dwarf signals for governing movements from the passing tracks to the main line are also of the color-position-light type and convey the same information to trains leaving a siding that is provided for main track movements except that the clear indication is not given. Means are provided to convey the same number of aspects that are provided by high signals; in fact, they are miniature signals of the same design as the high signals and are particularly useful in terminals or at any point where trains are not required to run at high speed. They are the only dwarf signals designed to give the "stop-and-proceed" aspect.

THE MINNESOTA RAILROAD AND WAREHOUSE COMMISSION took the south Minneapolis grade separation case under consideration on August 14, following final arguments by representatives of Minneapolis and of the Chicago, Milwaukee, St. Paul & Pacific and the Chicago, Rock Island & Pacific. The commission expects to decide the case within a month. Arguments were presented by Norton M. Cross, special counsel for the city, which favors the depression plan, and F. W. Root, counsel for the Milwaukee which advocates the elevation plan. The commission expects to decide the case within a month.

Fifty-Car Test Train Passing Over the Automatic Track Trip at a High Rate of Speed

Power Brake Tests In Siskiyou Mountains

A. R. A. service tests of freight brake equipment being conducted on Southern Pacific line near Eugene, Ore.

THE American Railway Association is now conducting road tests on air brake equipments for freight trains under actual service conditions on the Siskiyou line of the Southern Pacific near Eugene, Ore. These tests are being made under the direction of H. A. Johnson, director of research of the American Railway Association, and are a continuation of the investigation of power brakes and appliances for operating power brake systems in connection with Case No. 13528 of the Interstate Commerce Commission.

The objectives of the road tests are to check under actual service conditions the results obtained during the rack tests and at the stame time secure information that could not be obtained by means of rack tests. On the test rack it was possible to obtain in detail the functions of the different equipments and to study them for peculiarities that might eliminate them as unsafe or impractical for further investigation. The road tests will carry this investigation to the point of practical operation and determine such information as stopping distance, shock and slack action, as well as check the results of the rack tests. The maximum length of train tested on the rack was 100 cars, but during the road tests it is planned to use trains of 150 cars on some of the tests. The final object in view in making these extensive tests is to determine what, if any, changes in the present standard freight car brakes are necessary or desirable in order to maintain and improve the high degree of safety and efficiency of railroad operation; and, if changes are found necessary, whether a brake equipment meeting the desirable specifications is available.

Four equipments were tested on the American Railway Association test rack at Purdue university, Lafayette, Ind.; the standard Westinghouse Type K, the Automatic Straight Air, the Westinghouse Type FC-5 and the Westinghouse Type FC-3 equipment. These equipments were tested in both 50-and 100-car trains. In addition to the straight equipment tests, tests were made in which each of the new equipments was mixed in the same train with the standard K equipment. The results of the rack tests showed that the Automatic Straight Air Brake equipment did not warrant further consideration and, therefore, this equipment was not included in the program for road tests. This left three equipments to be subjected to road tests, the standard K, the Westinghouse Type FC-5, the Westinghouse Type FC-3 equipments.

The road tests are being conducted on that portion of the lines of the Southern Pacific lying between Eugene, Ore., and Black Butte, Cal., commonly referred to as the Siskiyou line. This section of track includes, within a distance of 250 miles, all of the conditions necessary for the road tests; the level road conditions being found near Creswell, 15 miles south of Eugene, Ore.; the moderate grade conditions being found between Ashland and Grants Pass, Ore.; and the heavy grade conditions up to 3.3 per cent being found between Ashland, Ore., and Hornbrook, Cal. Another feature that adds to the desirability of the Siskiyou line for these tests is the fact that the Southern Pacific has two lines between Eugene and Black Butte, and most of the heavy traffic is routed over the Cascade line. This assures there being a great part of the time during which tests may be made without interruption on the Siskiyou line. During the level road tests, the test train is op-

Test Train Standing at the Automatic Track Trip—The Measuring Stakes Set at 10-Ft. Intervals Are Visible in the Left Foreground

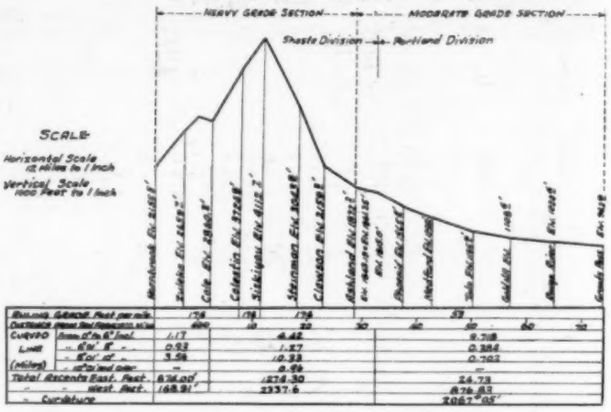
erating out of Eugene and during the grate tests the headquarters will be established at Ashland, Ore. At each of these locations, shops are available.

The schedule of road tests includes tests of 50, 100 and 150-car trains and will require approximately a year to complete. The table shows the number of tests to be made with each type of brake equipment.

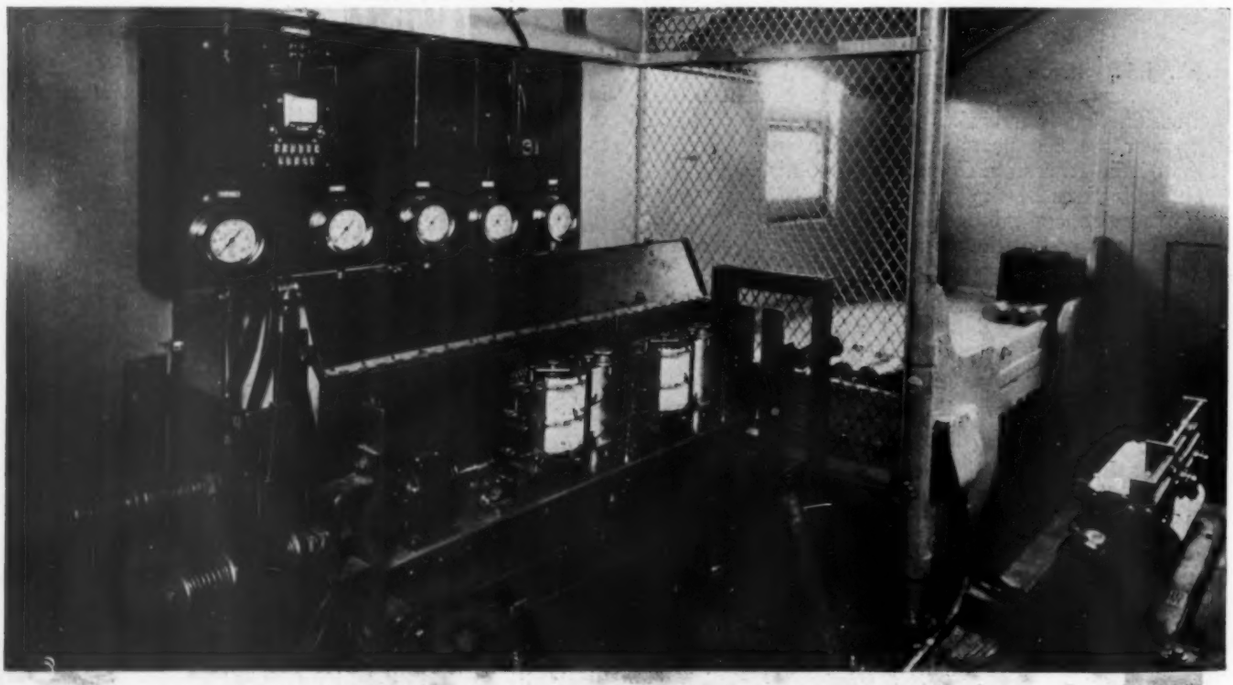
The test train consists of 10,000-gal. capacity tank cars, obtained from the General American Tank Car Corporation. Two dynamometer cars, furnished by the Southern Pacific and by the Atchison, Topeka & Santa Fé, respectively, are used, one at the head end and one at the rear end of the train to provide records of time, speed, car, travel, buff, drawbar pull, brake system pressures, etc. Additional instrument cars, evenly spaced throughout the train, are also furnished by the Santa Fe, consisting of all-steel caboose cars equipped with the proper recording and indicating instruments. A total of five instrument cars, including the two dynamometer cars, are used in the 50-car train, 7 in the 100-car train and 9 in the 150-car train. A Southern Pacific 2-10-2 type locomotive is assigned to haul the test

Summary of Running Tests to Be Conducted

No. of Cars	Kind of Road	No. of Tests
150	level	24
100	level	48
50	level	34
150	grade	12
100	grade	25
50	grade	8
	Total number of running tests	151
	Total number of standing tests	20
	Grand total	171



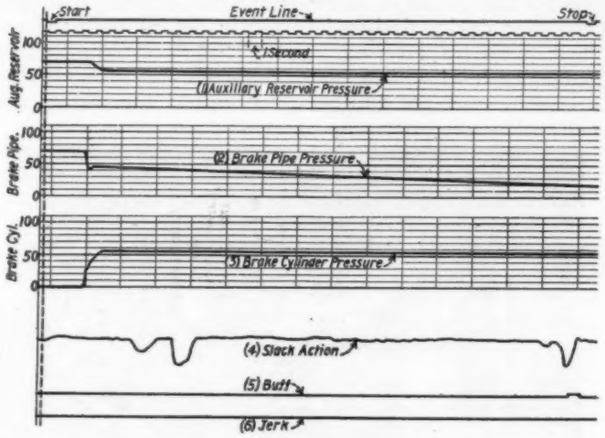
Profile of Southern Pacific Siskiyou Line Where Moderate and Heavy Grade Brake Tests Are Being Made



Interior of One of the Santa Fe Caboose Cars Used as an Instrument Car—The Trainagraph Is Mounted in a Specially-Designed "Cradle" To Dampen Vibration and Shocks

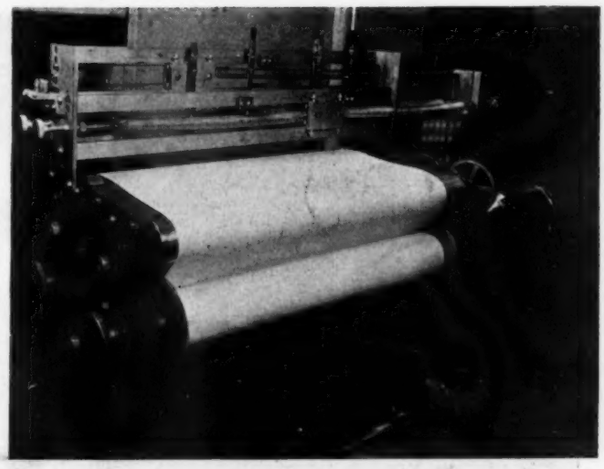
train, additional power being furnished as required to secure the necessary test speeds with heavy trains.

The running tests include tests with all cars in the train loaded, with all cars in the train empty, and with both empty and loaded cars in the same train. In level road operation, stops will be made from various speeds up to 50 miles per hour, and the critical speeds, below which emergency or service applications of the brakes result in rough handling, will be determined. For test purposes, there will be two conditions of train slack, namely, minimum slack and maximum slack. The minimum slack will be with all cars in the train in uniformly good condition, and the maximum slack condition will be created by using knuckles and pins worn to the condemning limit in each drawbar, representing a condition of maximum slack which may occur in service.



Sample Record from Last Instrument Car in 50-Car Train When Emergency Brake Application Was Made at 30 Miles an Hour

In the grade tests, the different equipments will be operated in accordance with the design of the particular equipment being tested. The trains equipped with the



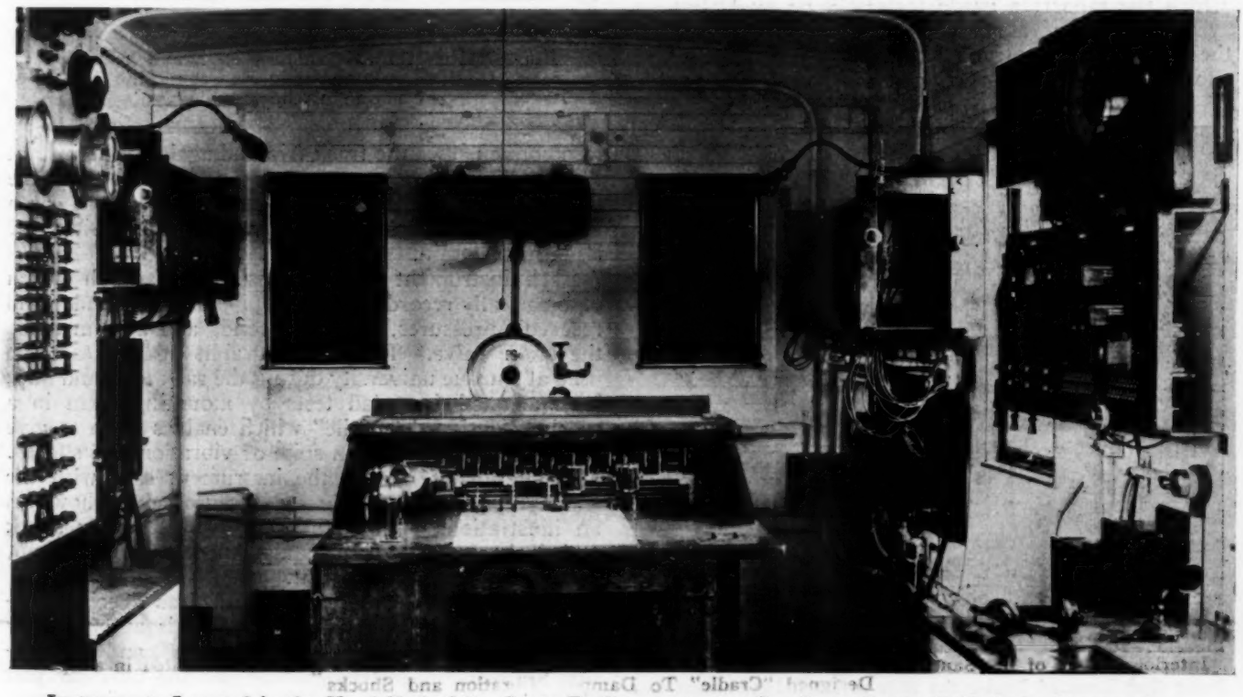
Detailed View of the Shock and Slack Instrument—The Recording Paper Is 16 In. Wide

K or FC-3 brakes will be controlled by cycling, while the train equipped with FC-5 brakes will be controlled both by graduated release and cycling operation. In the grade tests, the engineman will try to maintain uniform speed, with stops and emergency applications of the brakes during certain tests in order to obtain as nearly as possible all the conditions of actual service.

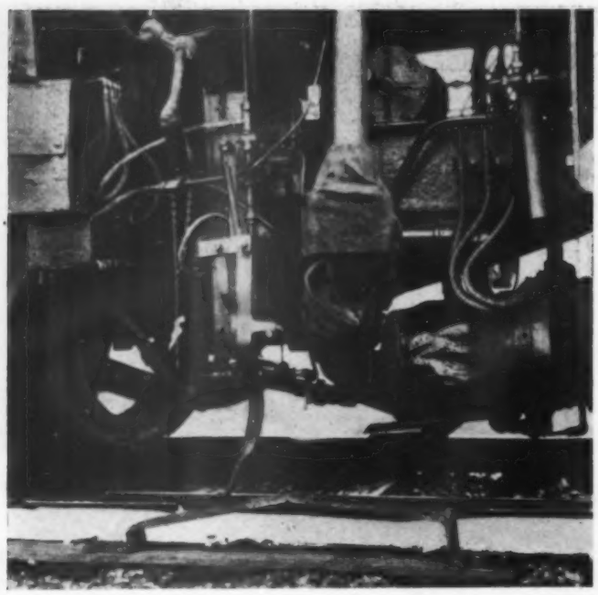
Test Crew of 20 Trained Observers

The personnel of the test crew is composed of approximately twenty men selected from the organization used in conducting the Purdue rack test. Practically all of these men are engineering graduates. They have had several years' experience on the rack tests and are especially trained for the work to which they are assigned.

Representatives of the Interstate Commerce Commission and the Westinghouse Air Brake Company are present on the train at all times during the tests. In addition, there will be members of the American Rail-



Instruments Located in the Head End of the Santa Fe Dynamometer Car Immediately Behind the Locomotive

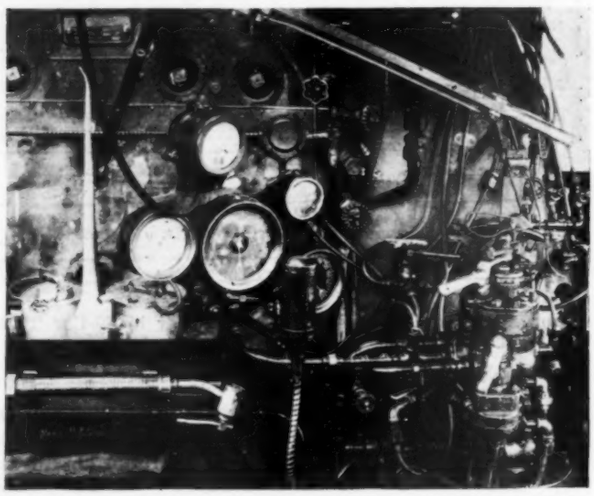


Automatic Track Trip—The Adjustable-Volume Reservoir for Obtaining Desired Brake Pipe Reductions Is Shown Near Top of the Picture

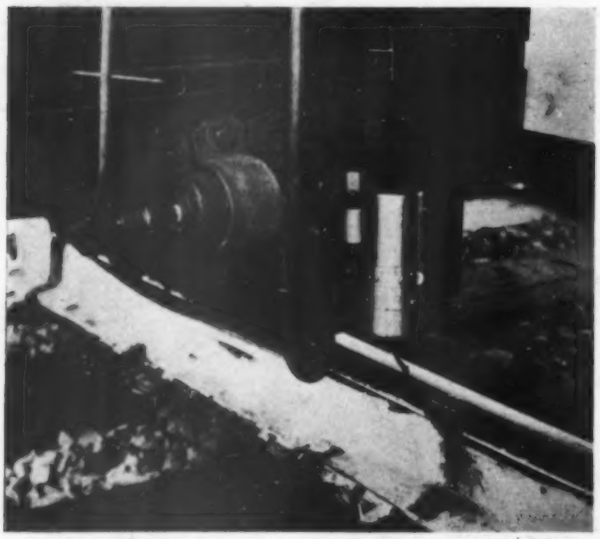
way Association Committee on Brakes and Brake Equipment, representatives of the Southern Pacific and other interested parties on board the test train during most of the tests.

A condensed profile of the track to be used for the grade tests is illustrated. The headquarters for the grade tests will be at Ashland, Ore. During the heavy grade tests the train will operate between Hornbrook, Cal., and Ashland, making tests in each direction on the down grade from Siskiyou. The grades from Hornbrook to Ashland average about three per cent, and curves are numerous, due to the mountainous country over which this track is constructed. The track on which the moderate grade tests will be made has an average grade of about one per cent. A profile for the level road test track located near Creswell, Ore., about 15 miles south of Eugene, is not shown as this track is straight with a slightly ascending grade of about .24 per cent.

The running of the road tests was started August 1 with a 50-car train on the level road section. The leading illustration shows the 50-car test train passing over the automatic track trip at a high rate of speed during one of the tests. The track trip is designed to apply the brakes automatically at a given point, the instant that this trip operates being recorded by the event pen on each instrument in the train. The automatic track trip is shown in position over the track ramp which initiates the brake application. One of the illustrations shows the 50-car test train standing at the track trip or zero point. The stakes seen to the left are spaced at 10-ft. intervals and the distance, plus or minus, from the zero point (track trip) is marked on the side of each stake to aid in determining the stopping distance. Another device designed to aid in determining the action of the train during the stop is the paint gun located under each instrument car. The paint gun shoots a slug of paint onto the white-washed rail at the instant the locomotive passes the track trip and again at the instant the locomotive comes to a stop. By comparing the distance between spots made by each instrument car a very accurate check may be made on the position of slack in the train.



Interior of the Locomotive Cab—Speed Indicator Shown Above Steam Gage—Quadrant on Brake Valve Is Used in Automatically Recording the Position of the Handle



Paint Gun Located Under the Side of Each Instrument Car and Used for Checking Position of Slack in the Train

Each instrument car contains a trainagraph which automatically records the brake pipe, brake cylinder and reservoir pressures, time in seconds and movement of the brake valve. These trainagraphs are the same as used at Purdue university during the rack tests and have been adapted for road tests by mounting them in a specially designed "cradle" which enables them to give clear, accurate records in spite of vibration and shocks. The interior of one of the instrument cars with the trainagraph installation in the foreground is shown in an illustration. The instrument for recording shock and slack, also part of the equipment in each instrument car, may be seen to the right.

The shock and slack instrument was specially designed for these road tests and records automatically the shock in the train both jerk and buff, and slack action between the instrument car and the tank car just ahead. A closeup view of the shock and slack instru-

ment is shown in one of the illustrations. The first pencil at the left records changes in slack, the slack pencil carriage being suspended between the spring at the right side and the string attached to the car ahead on the left side. By establishing a point on the record at which the slack is neither in nor out, the direction of the slack movement may be determined and the amount of change in slack from the normal position noted. The second pencil records the time in seconds. The third and fourth pencils record shock, the third pencil recording buff and the fourth pencil recording jerk. These two pencil carriages are suspended between springs, and a jerk or buff will cause the inertia of the spring carriages to move them in the opposite direction to the force of the shock. The fifth pencil records brake valve movement. The records of all slack and shock instruments run at the same speed as all trainagraph records and may, therefore, be readily compared.

A sample record, obtained on the last instrument car in the 50-car train when an emergency brake application was made with the train traveling at a speed of 30 miles an hour, is shown. The vertical dashed line shows the instant at which the locomotive passed the track trip, initiating the brake application. Curve 1 shows the auxiliary reservoir pressure, Curve 2, the brake pipe pressure, and Curve 3, the brake cylinder pressure as recorded by the trainagraph instrument. Curve 4 shows the slack action between this car and the tank car ahead. Curve 5 shows buff and Curve 6 shows jerk. The notch in the event line near the end of these records notes the point at which the locomotive came to a stop. Just before the stop, a slight buff was recorded on the shock curve No. 5, and at the same time the slack curve No. 4 shows a sharp change in slack.

The instruments located at the head end of the Santa Fe dynamometer car which is immediately behind the locomotive are illustrated in one of the views. The chronograph seen in the foreground records time, speed, car travel, buff and drawbar pull. The trainagraph located on each side in the end of the car records locomotive information as follows: Brake pipe pressure, equalizing reservoir pressure, locomotive brake cylinder pressure, position of the brake valve, length of exhaust blow, main reservoir pressure, and pump strokes. On the right are the master clock, relays and switches which control the operation of the trainagraph, and shock and slack instruments throughout the train. In the lower right-hand corner is the telephone exchange from which communication can be established with any instrument car in the train.

The interior of the locomotive cab is also shown in one of the illustrations. The meter just above the steam gage on the engineman's side indicates the actual speed of the locomotive in miles per hour. The brake valve and connections are shown to the right, the quadrant at the top of the brake valve being part of the apparatus for automatically recording the position of the handle during the tests. The speedometer is connected through a flexible cable to the right engine truck axle, the speedometer armature housing being bolted to the nearby cylinder. The voltage developed by the armature is in proportion to the speed of the train, giving an accurate measure of the locomotive speed on the dial located in the cab.

Special connections are used between the locomotive and the dynamometer car. The coupling, just below the brake pipe hose, carries steam from the locomotive to the turbo-generator unit located on the dynamometer car. Other connections are provided for the locomotive trainagraph, telephone and electrical equipment on the locomotive. Jumpers carry the 480-volt alternating current circuit between cars in the train, being designed so that in case of a break-in-two they will pull out without damage. The jumpers are weather-proof and built for hard wear. This line supplies power from the 15 k. v. a. turbo-generator unit located on the first dynamometer car, for driving the different apparatus in the instrument cars.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading for the week ended August 17 totaled 1,100,267 cars, representing respectively an increase of 9,651 cars over the preceding week, 42,358 cars over the corresponding week last year and 33,439 cars over the comparable 1927 week. Increases as compared with the corresponding week of the past two years were shown in the loading of grain and grain products, coke, ore and miscellaneous freight. Coal, forest products and merchandise loadings were above the comparable 1928 week but below 1927 while live stock loading was less than both 1928 and 1927. All districts except the Pocahontas, Southern and Central Western reported increases over the figures reported for the past two years. The loadings of the Pocahontas and Southern districts were above those of the corresponding 1928 week but below 1927 whereas those of the Central Western district were below 1928 but above 1927. The summary, as compiled by the Car Service Division of the American Railway Association, is given in the following table:

Revenue Freight Car Loading

Week Ended Saturday, August 17, 1929

Districts	1929	1928	1927
Eastern	246,493	242,561	243,943
Allegheny	223,822	215,448	216,017
Pocahontas	61,869	55,758	62,951
Southern	144,147	139,728	152,055
Northwestern	179,347	163,752	163,958
Central Western	158,996	159,689	150,572
Southwestern	85,593	80,973	77,332
Total Western Districts	423,936	404,414	391,862
Total All Roads	1,100,267	1,057,909	1,066,828
Commodities			
Grain and Grain Products	61,423	61,207	54,045
Live Stock	24,651	25,570	29,534
Coal	162,862	160,726	173,443
Coke	11,505	9,139	9,390
Forest Products	67,975	65,929	69,931
Ore	74,574	64,226	62,902
Merchandise L.C.L.	260,017	255,907	261,356
Miscellaneous	437,260	415,205	406,227
August 17	1,100,267	1,057,909	1,066,828
August 10	1,090,616	1,044,268	1,049,639
August 3	1,104,193	1,048,821	1,024,038
July 27	1,101,061	1,034,326	1,044,697
July 20	1,078,695	1,033,843	1,012,585
Cumulative totals, 33 weeks	33,045,234	31,556,812	32,575,306

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended August 17 totaled 69,942 cars, an increase over the previous week of 4,390 cars and an increase over the same week last year of 1,174 cars.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
August 17, 1929	69,942	37,275
August 10, 1929	65,552	37,724
August 3, 1929	69,900	38,316
August 18, 1928	68,768	39,563
Cumulative Totals for Canada		
August 17, 1929	2,190,274	1,367,174
August 18, 1928	2,135,402	1,285,295
August 20, 1927	2,005,555	1,243,511

S. P. Improves Supply Train Service

Addition of cranes and magnets to equipment makes operations cheaper, faster and safer

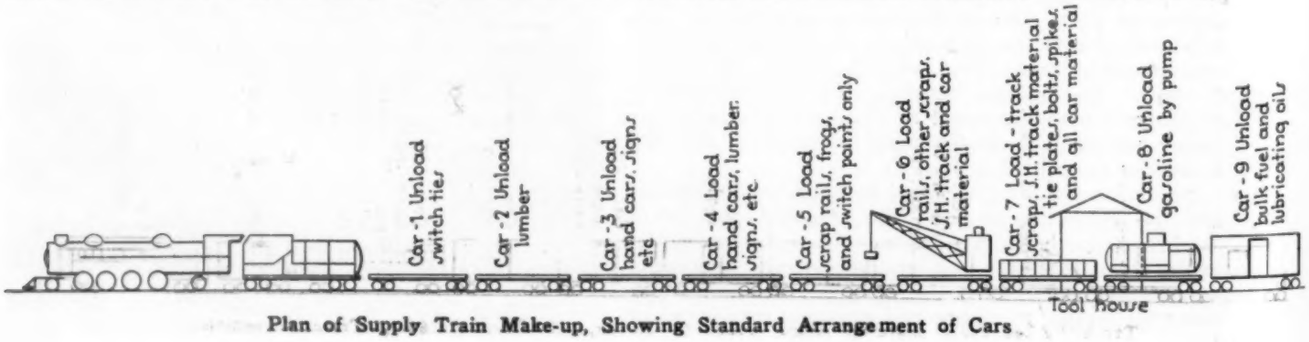
By C. H. Thompson
District storekeeper, Southern Pacific, Los Angeles, Cal.

The New and Old Ways of Loading Scrap Along the Line—Faster, Cheaper, Safer

SUPPLY train work on the Southern Pacific Lines, that is, the work of specially equipped trains which travel over the system periodically to deliver supplies to sections, etc., has been greatly improved in the last two years by the use of cranes equipped with magnets.

Since the commencement of the supply train service, which dates back to 1906, the store department has directed its attention principally to the delivery of materials and supplies to users along the lines. Cars and equipment were designed and provided to take care of the various commodities handled, including tool cars, oil cars, gasoline tank cars and others, but the loading of scrap and discarded material was generally considered the work of the maintenance of way department whose forces were available at the section tool houses to load the accumulation. Air hoists operated from the train line were mounted in stake pockets on the flat cars to load rail and frogs, but these outfits proved inefficient, for too many men were required to operate the machines and handle the material.

As a general rule, while working under such conditions, the train was ready to leave a station before the old material was half loaded. It required six to ten men to handle rails, frogs and other heavy material, and the angle bars, tie plates, etc., were loaded piece by piece. The movement of the train was slow and much overtime was paid both train crews and maintenance of way forces. Furthermore, with the adoption of heavier rail, frogs and switches, the air-operated equipment became unsafe. As a result, the loading of all scrap and discarded material in connection with supply train operations has since been included in the work of the



Plan of Supply Train Make-up, Showing Standard Arrangement of Cars

store department and the hoists replaced by gasoline-operated cranes with lifting magnets.

Magnets Installed in 1927

The first crane was placed in operation the latter part of 1927 and it proved so successful that a second one was installed the following year. This crane is operated by one man and works under its own power on top of a 50-ft. flat car, which allows it the run of the entire length of the car, enabling the operator to load two cars before it is necessary to switch in other empty cars. The crane is equipped with a 60-h.p. gasoline engine, a 40-ft. boom and a 36-in. magnet. The electricity is furnished by a 5½-kw. generator. The crane has a capacity of 7 tons, with lifting capacities of 9,200 lb. at 15-ft. radius, 5,900 lb. at 20-ft. radius, and 3,100 lb. at 30-ft. radius. A steel cab, enclosed on all sides and ends, houses the power machinery and the arrangement is such that the crane can be swung sidewise without striking equipment on adjacent tracks where the track spacing is not less than 13 ft. center to center. The crane can be operated on surface tracks as well as on a flat car and is equipped with flood lights to facilitate night operations.

Cut Time in Half

In accordance with a pre-arranged plan developed in co-operation with the roadway forces, all miscellaneous scrap, second-hand rail and scrap frogs are so located at section tool houses that only one stop of the supply train is required to load material as well as to pump gasoline from the tank car and unload other materials. By this means, the time consumed by the supply train at section headquarters has been reduced by at least one-half since the magnet crane was put into service. Furthermore, scrap and rail cars can be loaded to full capacity. Heavy castings, such as couplers, wheel-replacing castings, frogs and other heavy pieces of material are both difficult and hazardous to load by hand, but all of this heavy material can now be placed high on the cars without any difficulty. With the long boom which can be swung in a complete circle, the crane can easily sweep 50 to 60 ft. of track from one position, and it is a common operation to pick up by hand labor a frog or several sections of rail laying 25 ft. to 40 ft. from the track. As many as 40 to 50 tie plates are picked up at a time which greatly expedites the work, and track spikes and track bolts are handled in the keg or box, the wood offering no obstruction to the magnets' lifting power.

Less Work Train Service

Large savings have also been made through curtailing work train expense of the maintenance of way department since the crane with the supply train is able to pick up second-hand and scrap rail after curve renewals

The Crane Can Sweep Over 50 Ft. of Track at One Spotting

or rail laying jobs have been completed and perform other similar work which formerly required a work train. Also, layover days are arranged to permit the supply train crane, with the magnet, to load rail and fittings released from rail renewal jobs on main lines and branches, where such equipment is not available at all times.

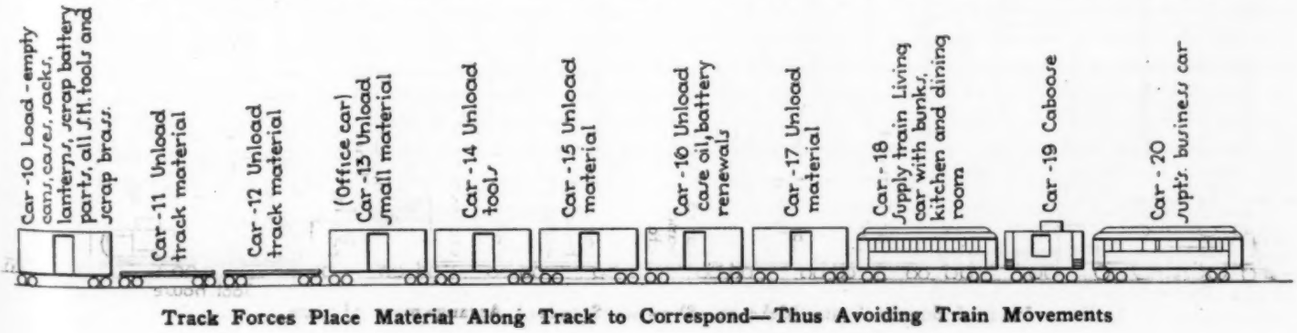
Save Over $17,000 Per Year

The savings effected through the operation of the gasoline supply train crane equipped with the lifting magnet continue to increase as different operations are assigned to the machine. The following economies are among those obtained during the first year after the crane was placed in service:

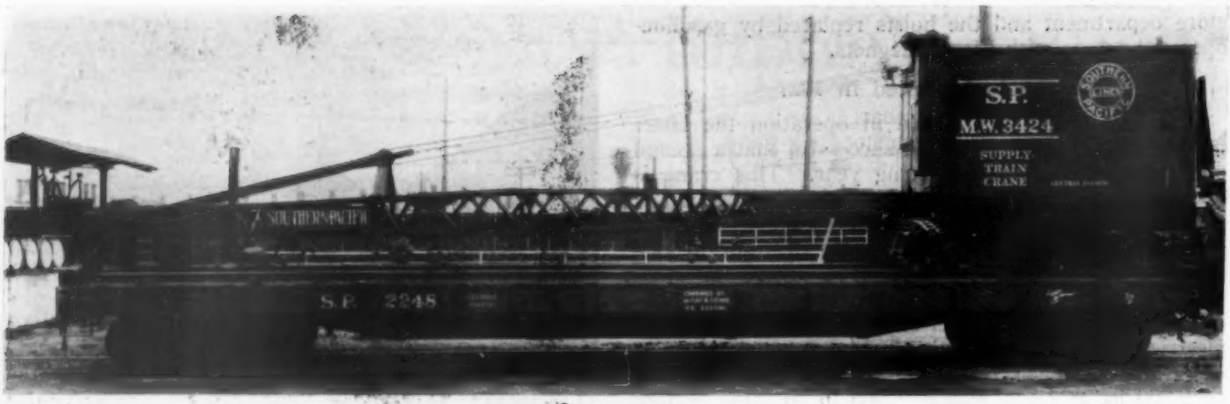
Cost of work train service for 49 days	$ 5,016
Loading scrap at terminals	4,410
Carrying laborers with supply train	1,932
Loading scrap at sections	3,810
Boxing and sacking scrap for hand loading	2,040
Shorter supply train days	990
Cost of switching cars to pick up scrap	2,320
Total	$20,518

The corresponding costs of each crane are $2,000 for the salary of the operator and for gasoline and oil, and $1,150 for repairs, depreciation and interest on investment, or a total of $3,180, making the net annual saving from the crane operation $17,328. In addition, the magnet crane eliminates accidents in the handling of heavy materials.

With the crane and magnet included with other details and arrangements, supply train operations are now marked with a high degree of efficiency and usefulness to all departments concerned. These trains are supply trains in fact as well as in name, consisting, as they do, of solid trains operated primarily, if not at all times exclusively, for line supply service and not consisting merely of a few supply cars in a freight train,



Track Forces Place Material Along Track to Correspond—Thus Avoiding Train Movements



The Supply Train Crane Ready for the Road—Note Long Boom, Also Compact Cab Which Can Swing Without Obstructing Clearances

and, therefore, subject to all the delays and uncertainties of movement that fall to the lot of way-freights. They are not loaded with supplies for crews and station forces situated close enough to terminals to make it more economical to deliver such materials by automobile, nor do they attempt, except in rare cases, to distribute ties, rails and similar materials for renewal or construction jobs on the line, but they do deliver all miscellaneous material required over the line that can be anticipated ahead, pick up materials at stations and between stations, and provide also for a periodic inspection of supply conditions by the division authorities.

Operate Every Two Months

From Los Angeles, a supply train operates to San Francisco, about 500 miles, then from Los Angeles over another route to Fresno, 300 miles, then between Los Angeles and El Paso, Tex., 1,350 miles, and from El Paso to Tucumcari, N. M., an additional 400 miles, or a total of 2,550 miles a trip. This territory is covered every two months, which keeps the train moving constantly during the period with the exception of one or two days to load equipment, and also with the exception of Sundays, when the train lays over at the nearest terminal.

The standard equipment consists of 20 cars, including the crane, a well-equipped office car, a living car, and other cars devoted exclusively to supply service, such as a gasoline tank car equipped with a pump, and special cars for oil and small materials, to which are added the required number of box, gondola or flat cars, which have been loaded with materials or which are to be used for picking up materials enroute. In addition to this equipment, the division superintendent's business car is usually coupled to the train behind the caboose.

Preliminary to the trip, a supply train loading foreman prepares all material for shipment, going so far as to assemble much of it in separate buildings to expedite loading, and the regular cars and all other equipment are assembled in the train in accordance with a standard plan which fits the arrangement of right-of-way facilities at all stations and is so conceived that all

Southern Pacific Company - Pacific Lines

Supply Train Operation

Supply train route number _____ Division _____ Month of _____ 192___

Date	From	To	Crew called for	Depart	Arrive	Accompanied by					*Material picked up enroute and delivered to another point or service which eliminates special work such as sprinkling road crossings, etc.					
						Supt.	Div. engr.	Road-master	Div. strkpr.	Misc.	Cars	From	To	Miles	Material	Estimated value
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

Total number of cars handled on each division _____

Delays to be explained fully

_____
Supply train storekeeper

Instructions:
1. Make separate report for each division
2. Original to g.s.k. - copy to district storekeeper from which train operates
3. *Data in columns 12,15,16,17 to be included in monthly report from district storekeeper to general storekeeper

Form for Reporting All Work and Progress of Train and Roll Call of Officers

supply train work can be done with the least expenditure of time. The regular crew consists of seven men—a supply train storekeeper, an assistant storekeeper in charge of the oil and tool cars, an assistant in charge of unloading, an assistant in charge of the gasoline car and the pumping of the oil into storage tanks or barrels, a crane engineer, and a cook and a waiter, while the train is invariably accompanied by several divisional officers, including usually the division superintendent. These officers not only co-operate in the supply work, but also make the supply train trip the occasion of a joint inspection of mantenance of way facilities and operations.

Train Movements Scheduled

Previous to the departure of the supply train, the district storekeeper issues a schedule, showing the hour the train is to leave the terminal, and the division storekeeper then notifies all persons concerned and issues other instructions as to the handling of material on his division. The section foreman and other users of material are present at their headquarters when the train stops and all tools, buildings and cabinets are laid open for inspection, while the different materials to be picked up are placed where the standard plan indicates they can be handled with the least trouble. A motor car mechanic rides the train to make an inspection of the motor cars at section houses. As a result of the inspection, which is participated in by the division engineer, roadmaster and other supervisors, besides the supply train storekeeper, it is determined on the ground whether the issues of material in each particular shall exceed those called for on the requisition or whether the quantities shall be reduced in accordance with the conditions found on the ground.

Take Roll Call of Passengers

The supply train storekeeper keeps a record of all officers and passengers on the supply train, as well as of all cars picked up and any delays or other irregularities encountered enroute and furnishes copies of this report, which is made out on a standard form, to the general storekeeper and to the district storekeeper of each division. Almost invariably when supervisors, who are usually expected to accompany the train, are reported missing in these reports, they are asked for explanations, while other visitors reported on board in these statements get a letter expressing the general storekeeper's interest in the visit and asking for any comments or criticisms. A thorough supply service is rendered, all sections are inspected, surplus supplies are picked up and the work is done at a minimum expense for train service or delay to the labor forces.

During the typical month of January, the supply train operating out of Los Angeles delivered $139,000 worth of materials; it also picked up 104 cars of miscellaneous materials, weighing 1,833 tons and valued at $45,000, including $5,000 new material, $16,500 second-hand material, $12,000 second-hand rail, $3,800 scrap rail and $7,700 other material.

Report on Depreciation Accounting

Commissioner Eastman makes recommendations in re-opened case—Briefs receivable until November 1

COMMISSIONER Eastman has presented to the Interstate Commerce Commission a proposed report of 82 printed pages on depreciation accounting for railroads (No. 15100). and telephone companies (No. 14700). A decision in these cases was handed down on November 2, 1926, but they were re-opened. The testimony presented at the re-hearing is discussed in detail as are the various recommended findings. These recommended findings are given below, together with the changes from the findings of the original report (118 I.C.C. 295, which was abstracted in the *Railway Age*.of December 11, 1926, page 1164).

Definition of Depreciation

(1) We therefore find that depreciation is the loss in service value not restored by current maintenance and incurred in connection with the consumption or prespective retirement of property in the course of service from causes against which the carrier is not protected by insurance, which are known to be in current operation, and whose effect can be forecast with a reasonable approach to accuracy.

The change consists in a deletion of reference to "extraordinary repairs" from the original findings.

Expense of Depreciation

(2) We further find:

That the term "service life" shall be construed to mean the period of time between the installation of the unit in question and its retirement for accounting purposes.

That the term "salvage value" shall be construed to mean the amount received for property retired and disposed of, or the amount representing the secondhand value if suitable for reuse, after deducting the cost of removing the property and of recovering the salvage, subject to the following exceptions:

(a) Where a unit of property is retired from one location and removed to another where it is put to the same use after a process of reconditioning which renders it as efficient for such use as a new unit, the amount written out of the investment account in connection with the retirement shall be taken as the salvage value and costs of removal and recovery charged to operating expense.

(b) In the case of the four depreciable railroad track accounts, costs of removal and recovery shall not be deducted in determining salvage value but shall be charged to operating expense.

That the term "service value" shall be construed to mean the difference between the ledger value of the unit and its salvage value, such ledger value to be determined in accordance with findings (8) and (9) infra.

That the total expense of depreciation in connection with any unit of property is its service value as above defined.

Findings (10) and (11) of the original report, which had reference to depreciation accounting for certain structures replaced and maximum and minimum charges to be made to depreciation, accounts are eliminated. The above reading is considerably abridged from the (2) of the original report.

(3) We find that annual depreciation charges shall be computed at such percentage rate of the ledger value of the unit of property in question that the estimated service value may be distributed under the straight-line method in equal annual

charges to operating expenses during the estimated service life of the unit. Annual charges so computed shall be reduced to a monthly basis by dividing by 12.

No material change is made in this finding.

(4) Refers to telephone companies.

Classes of Depreciable Railroad Property

(5) We find that the classes of property of steam railroad companies for which depreciation charges may properly be included under operating expenses are the classes of property covered by finding (5) in our prior report and in addition "Grading."

A list of depreciable property as heretofore determined is given in the *Railway Age* of December 11, 1926, page 1164.

Unit Basis Versus Group Basis

(6) We find that the group basis of depreciation accounting, as distinguished from the unit basis, should be adopted; that for corporate ledger and balance sheet purposes the depreciation reserve should be regarded and treated as a single composite reserve; but that for purposes of analysis the carriers should maintain subsidiary records in which the reserve is broken down into component parts corresponding to such primary investment accounts under the respective classifications for steam railroad companies and telephone companies as include property hereinbefore found to be depreciable, showing in these records also in complete detail by such primary accounts the current credits and debits to the reserve; and that such detail information should be reported annually to this commission and to the commissions of all States in which the carrier operates.

This is an amplification of the finding (6) in the original report.

Determination of Prospective Service Lives

(7) We find that the percentages of depreciation which shall be charged by steam railroad companies and telephone companies with respect to each primary account of depreciable property shall be determined as follows: Each such company shall estimate the percentages of depreciation which it deems applicable to the ledger value of each such primary account, such percentages being based upon service values and service lives, as hereinbefore defined, developed by a study of the company's history and experience and such engineering information as may be available with respect to future prospects. In each case such estimates shall be accompanied by sworn statements showing the bases therefor and the methods employed. In the case of steam railroad companies, such estimates and the accompanying statements shall be filed with this commission within the time prescribed in the order hereinafter entered. In the case of telephone companies such estimates and the accompanying statements shall be filed, within the time prescribed, with the State commission or commissions having jurisdiction over the particular company, except that where no State Commission has jurisdiction or is willing to act in the premises they shall be filed with this commission. In the case of steam railroad companies this commission shall, after an office check, prescribe by temporary order the percentages of depreciation which shall be charged with respect to each class of property of each company, and in the case of telephone companies this commission shall by temporary order prescribe similar depreciation percentages, following the recommendations of the State commissions to the extent that such advice can be procured. After the issuance of the temporary orders, opportunity shall be afforded at public hearings, if desired, for the presentation of evidence by all interested parties with a view to the modification of such orders, and for the submission to this commission of views based on such evidence. In the case of telephone companies, such public hearings shall be conducted for this commission, so far as possible, by State commissions.

This finding is unchanged.

Investment Accounts

(8) We find that each steam railroad company shall, as of the effective date of the order in this proceeding, eliminate account 701, "Investment in road and equipment," and account 705, "Miscellaneous physical property," from the list of balance sheet accounts and substitute therefor account 701, "Investment in physical property owned." The balance in the new account as of the effective date of the order shall be the sum of the balances in the superseded accounts as of the close of the preceding day, subject to the proviso in Note A below, and currently each month thereafter there shall be charged and credited thereto, respectively, the cost to the company of new property constructed or acquired and the amount previously included therein with respect to property retired.

That as of the effective date of the order, and thereafter, account 701, "Investment in physical property owned," shall be supported by the balances carried in subaccounts to be established bearing numbers and titles substantially as follows:

Original Cost

701 (a). "Original cost of carrier property owned," in which shall be shown the original cost for construction and improvement of carrier property owned by the company, as found under the provisions of section 19a of the interstate commerce act and the commission's administrative orders pertaining thereto as hereinafter explained.

701 (b). "Original cost of noncarrier property owned," in which shall be shown the original cost of noncarrier property owned by the company, as found under the provisions of section 19a of the interstate commerce act and the commission's administrative orders pertaining thereto as hereinafter explained.

701 (c). "Difference between original cost of property owned and the investment therein," in which shall be shown the difference between the balance in account 701, " Investment in physical property owned," and the original cost of carrier and noncarrier property owned as reflected by the sum of the balances in accounts 701 (a) and 701 (b).

That the title of account 702, shown in the current classifications as "Improvements on leased railway property," shall be changed to "Leased physical property," and as of the effective date of the order the balance in this account shall be the same as that shown therefor at the close of the preceding day, subject to the proviso in Note A below, and currently each month thereafter there shall be charged and credited thereto, respectively, the cost to the carrier of improvements placed thereon and the amount previously included therein with respect to property retired.

That as of the effective date of the order and thereafter account 702, "Leased physical property," shall be supported by the balances carried in sub-accounts to be established bearing numbers and titles substantially as follows:

702 (a). "Original cost of carrier property used but not owned," in which shall be shown the original cost for construction and improvement of all carrier property solely used but not owned by the company, as found under the provisions of section 19a of the interstate commerce act and the commission's administrative orders pertaining thereto as hereinafter explained. (See Note B.)

702 (b) "Original cost of noncarrier property used but not owned," in which shall be shown the original cost of improvements placed by the company upon leased physical property that have, under the provisions of section 19a of the interstate commerce act and the commission's administrative orders pertaining thereto, been classified as property held for purposes other than those of a common carrier.

702 (c). "Difference between original cost of property used but not owned and the investment therein," in which shall be shown the difference between the balance in account 702, "Leased physical property," and the original cost of carrier and noncarrier property used but not owned by the company as reflected by the sum of the balances in accounts 702 (a) and 702 (b).

NOTE A.—If the company is able to show that the cost of any property included in account 701(a) or account 702(a) was in whole or in part charged to operating expense, it may, with the approval of the commission, increase the total of account 701 or account 702, as the case may be, by the amount of such charges to operating expense and contemporaneously credit a corresponding amount to its depreciation reserve.

NOTE B.—Account 702(a) shall not include items of property the rent of which is included in net railway operating income, or other items of property accounted for by the user as a joint facility under the joint facility rules of the commission's classifications.

That the company shall maintain subsidiary records in which all entries in accounts 701 (a), 701 (b), 702 (a) and 702 (b), shall be classified under the primary accounts provided in the classifications of original cost of carrier property and of original cost of noncarrier property. Such subsidiary records of accounts 701 (a) and 702 (a) shall be kept, not only by primary accounts, but also by valuation sections, and in such a manner as to show separately the original cost of carrier property devoted to common carrier purposes that is (1) owned and used; (2) owned but not used—used by another common carrier; (3) owned but not used—used by others than common carriers; (4) used but not owned—property of another carrier solely used; and (5) used but

not owned—property of private parties or noncarrier corporations solely used.

That the costs to be entered in accounts 701 (a), 701 (b), 702 (a), and 702 (b), as of the effective date of the order, shall be determined by the company as follows:

(a) In the case of property, other than land, installed prior to July 1, 1914, the cost to be recorded shall be determined upon quantities and prices included in the reports underlying the commission's basic valuations. (See Note C.)

(b) In the case of property, other than land, installed subsequently to June 30, 1914, but prior to date of valuation, the cost to be recorded shall be determined upon the quantities included in the reports underlying the commission's basic valuations, but upon prices equal to the actual cost of the property as recorded. (See Note C.)

(c) In the case of property, other than land, installed subsequently to the date of valuation, including property added through replacements and betterments, actual quantities and costs as recorded under the provisions of Valuation Order No. 3, and any supplements thereto or revisions thereof, shall be used, notwithstanding the requirements of the present classification with respect to the accounting for such property. (See Note C.)

Original Cost of Land

(d) In the case of land, the original cost of each parcel, as found by the commission under the provisions of Valuation Order No. 7, modified by changes since the date of basic valuation as recorded under the provisions of Valuation Order No. 3, and any supplements thereto or revisions thereof, shall be used. If the original cost of a parcel is not of record and was so reported under the provisions of Valuation Order No. 7, the amount applicable to such parcel shall be an estimate of original cost made subject to approval of the commission. (See Note C.)

(e) With respect to property changes made through replacements and betterments affecting accounts 8, "Ties," 9, "Rail," 10, "Other track material," 11, "Ballast," the actual cost of materials only shall be used; and for account 6, "Bridges, trestles and culverts," and other primary accounts, the actual cost of labor and material shall be used but may be limited to consequential items. (See Note C.)

(f) In the case of account 12, "Tracklaying and surfacing," the amounts applicable thereto shall be those shown in the basic valuation reports for that account modified by subsequent changes as recorded under the provisions of Valuation Order No. 3, and any supplements thereto or revisions thereof. (See Note C.)

NOTE C.—In the event the commission has made a finding of original cost or an agreement approved by the commission has been or is hereafter reached by the Bureau of Valuation and the carrier with respect to cost, such original cost or agreed cost shall be used instead of the amounts determined in accordance with paragraphs (a) to (f).

That the ledger values of carrier property used for depreciation accounting purposes shall be the costs entering into account 701 (a) or 702 (a), as the case may be, subject to the provisions of finding (9); provided, however, that if the difference represented by account 701 (c) is a minus quantity, the percentage relation of such difference to the sum total of accounts 701 (a) and 701 (b) shall be ascertained at the beginning of each year and the costs entering into account 701 (a) shall throughout the year be treated as reduced by such percentage for the purpose of determining the ledger values to be used for depreciation accounting purposes, and when property in account 701 (a) is retired the current ledger value so determined shall be written out of account 701 and the costs previously written into account 701 (a) with respect thereto shall be written out of the latter; and provided, further, that in the case of leased property if the total of account 701 of the lessor carrier plus the portion of account 702 of the lessee carrier assignable to such lease is less than the sum total of the portions of accounts 702 (a) and 702 (b) of the lessee carrier assignable to such lease, the percentage relation of the difference to such sum total shall be ascertained at the beginning of each year and the costs of said leased property entering into account 702 (a) shall throughout the year be treated as reduced by such percentage for the purpose of determining the ledger values to be used for depreciation accounting purposes, and when property in account 702 (a) is retired the current ledger value so determined shall be written out of account 701 of the lessor carrier or account 702 of the lessee carrier, as may be appropriate, and the cost previously written into account 702 (a) with respect thereto shall be written out of the latter.

This finding is rewritten and amplified.

(9) We find, therefore, that in determining the amounts to be respectively credited to the primary investment account and charged to the material and supplies account and to the depreciation reserve in the case of the retirement of a unit of property, amounts for specific units shall be used so far as practicable; but that where that is impracticable, because of the relatively large number and small size of the units, average amounts shall be used. Such accounting shall be in accordance with detailed instructions hereafter to be issued by the Bureau of Accounts of the commission.

This finding is unchanged.

Retirement For Causes Which Are Not Factors in Depreciation

(10) We find that when depreciable property is retired the loss in service value shall, whether or not the cause of the retirement is a recognized factor in depreciation, be charged in its entirety to the depreciation reserve; provided, however, that

(a) If the cause of the retirement is not a recognized factor in depreciation but is a cause against which the carrier is insured, the depreciation reserve shall be credited with the full amount of the insurance recovered.

(b) If the cause is not a recognized factor in depreciation nor covered by insurance, the carrier may, upon proof that the charge will result in undue depletion of the depreciation reserve and with the approval of the commission, charge the loss to suspense account 726, "Property Abandoned Chargeable to Operating Expenses" and distribute it from that account over such period of years in the future as the commission may approve.

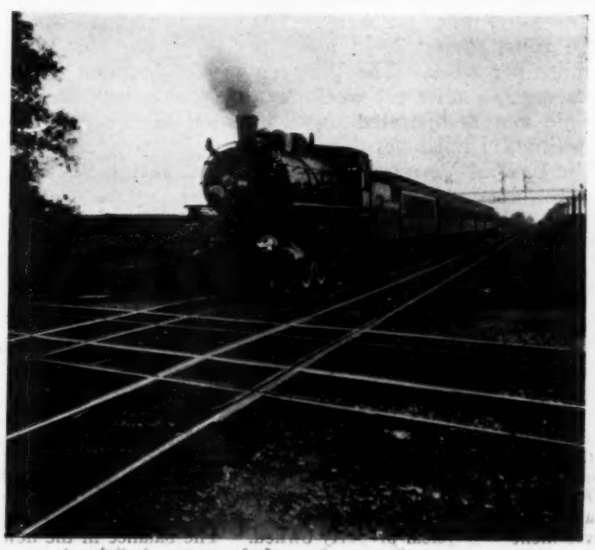
This finding is substantially the same as (12) of the original report.

Past Depreciation Unprovided For

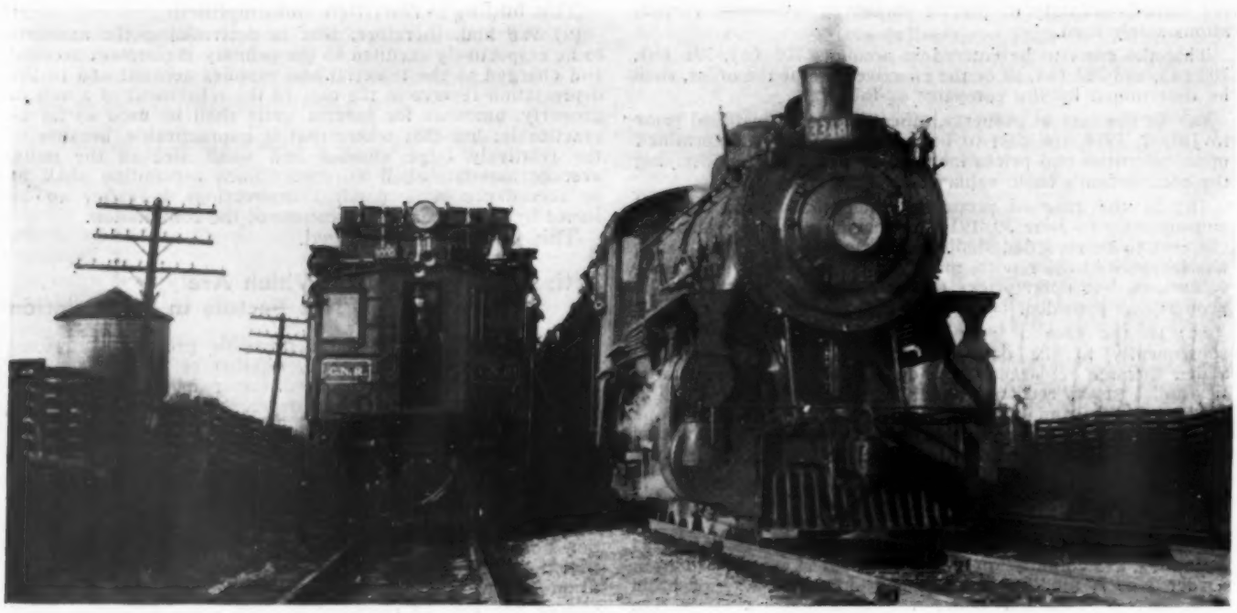
(11) We find that each carrier, both steam railroad and telephone, shall make an estimate, subject to check and revision by the commission and as of the date when the system of depreciation accounting herein prescribed is made effective, of the accrued depreciation in its property, such estimate to be broken down into component parts corresponding to such primary investment accounts under the respective classifications for steam railroad companies and telephone companies as include property hereinbefore found to be depreciable. Such accrued depreciation, to the extent that it is unprovided for by the then existing reserve, may, in the option of the carrier, be credited in whole or in part to the depreciation reserve and concurrently charged to profit and loss.

This is substituted for finding (13) of the original report.

* * *



A Suburban Train on the Rock Island, Near Gresham, Ill.



Two Types of Power on the Canadian National

Rail Motor Cars Effect Economies

Canadian National studies operations carefully and obtains results

BY the use of rail motor cars, the Canadian National, including its subsidiary, the Central Vermont, is saving 5,304 steam passenger train miles daily, or 31,824 miles per week.

In all, 34 services are operated, and 8 more services will be added this year, as fast as the rail motor cars now being constructed are delivered to the transportation department. These services are operated throughout the system. The Atlantic region operates 8 runs, saving 850 steam passenger train miles per week day, and 5,164 miles per week. The Central region operates 16 runs, saving 2,435 miles per week day, or 14,677 miles per week. The Western region operates 4 runs, saving 776 miles per week day, or 4,551 miles per week. One run is operated on the Grand Trunk Western, saving 211 miles per day, or 1,266 miles per week, while the Central Vermont operates 5 runs, saving 964 miles per week day, or 5,784 miles per week.

The wide geographic spread covered by these services is indicated by the most easterly service, which is maintained between Charlottetown and Tignish on Prince Edward island in the Gulf of St. Lawrence, and the most westerly service, between Victoria and Kissinger, on Vancouver island, in the Pacific Ocean. The distance between Charlottetown and Victoria is approximately 3,850 miles.

Rail motor cars have been used by the Canadian National to take the place of steam passenger trains in a wide variety of services. The daily mileage per run ranges from 260 on the car operated between Lyster, Richmond, Sherbrooke and Coaticooke, Que., to 16 miles on the car operated between Black Rock, N. Y., and Bridgeburg, Ont.

The average daily mileage made on the Atlantic region is 106, on the Central region 152 miles, on the Western region, 194 miles, on the Central Vermont, 173 miles and the one run on the Grand Trunk Western makes 211 miles per day. The details of these runs are given in the accompanying table.

Ten of the runs on the C. N. R. proper are handled by rail motor cars alone, 13 are operated with one trailer, 1 with two trailers, 2 with coaches, 1 each with a baggage car and a mail car and 1 with a trailer and a mail car.

Cars Owned Total 40

The C. N. R. owns 40 rail motor cars. Of these, 6 are storage-battery cars, 4 are gas-electric, 14 gasoline, 14 oil-electric and 2 steam unit. Of these, 28 are used in revenue service, 7 are used as spares, and the remaining five are in company service of various sorts, such as inspection service and employees shuttle trains to shops. Of the oil-electric cars, two have eight-cylinder engines, five have six-cylinder engines, and seven have four-cylinder engines.

The cars used in revenue service have a wide range of seating capacity, the largest having room for 91 passengers in the main compartment and 35 in the smoker, and the smallest handling only 20 passengers in all. The lengths of the baggage and mail compartments are similarly varied, some of the cars having no such compartments, while on others, the baggage room is as long as 38 ft. 7 in.

To supplement the motor cars, the C. N. R. uses 23 trailers, a baggage car, a mail car, a mail and express car and a coach. Of these 20 are used regularly in revenue

service, 5 as spares, and 2 in employee shuttle-train service. The passenger trailers range from 67 ft. 10 in. in length with seating capacity for 70 passengers, to 36 ft. 5 in., with seating capacity for 36 passengers.

Motor Car Runs—Canadian National

Operating Between	Round Trips Per Day	Miles Per Day
Atlantic Region		
Tignish, P. E. I., and Charlottetown	1	230
Lunenburg, N. S., and Mahone Bay	4	56
Elmsdale, N. S., and Halifax	3	128
Stellarton, N. S., and Sunny Brae	2	65
Oxford, N. S., Truro and Sackville Jct.	1	173
Stanley, N. B., and Stanley Jct.	2	21
Bathurst, N. B., and Campbellton	1	126
Campbellton, N. B., and Matapedia, Que.	2	51
Central Region		
Lyster, Que., Richmond, Sherbrooke, Coaticook	2	260
Sherbrooke, Que., and Richmond	1	49
Montreal, Que., and Waterloo	1	139
Coteau, Que., and Cantic	2	186
Coteau, Que., and Valleyfield	4	42
Montreal, Que., and Ottawa, Ont. (Via Coteau)	1	232
Montreal, Que., and Ottawa, Ont. (Via Tunnel)	1	228
Westport, Ont., and Brockville	2	178
Tweed, Ont., and Kingston	1	150
Belleville, Ont., and Brockville	1	190
Hamilton, Ont., Toronto and London	1	239
Black Rock, N. Y., and Bridgeburg, Ont.	10	16
Capreol, Ont., South Parry and Depot Harbor	1	146
Ste. Rosalie, Que., and Nicolet	1	119
Montreal, Que., and Iberville	1	56
Quebec, Que., and Richmond	1	205
Western Region		
Winnipeg, Man., and Transcona	9	162
Victoria, B. C., and Kissinger	1	190
Regina, Sask., and Saskatoon	1	220
Somerset, Man., and Winnipeg	1	204
Grand Trunk Western		
Richmond, Mich., and Jackson	1	211
Central Vermont		
Brattleboro, Vt., to New London, Conn.	½	242
New London, Conn., to Brattleboro, Vt.	½	242
Burlington, Vt., St. Albans and Cambridge Jct.	2	135
Montpelier Jct., Vt., and Barrie	7	122
St. Albans, Vt., and Barrie	1	133

After deciding that the rail motor car is the proper means of transportation on certain runs, the C. N. R. endeavors to confine these runs to rail motor cars and steam trains are substituted only when an abnormal traffic is expected. The company maintains the older and less useful motor cars and trailers as spare cars. These are situated at strategic points so that they are readily available. Four of the spare motor cars and three spare trailers are assigned to the Central region, two spare motor cars and one trailer to the Western region and one spare motor car and one trailer to the Atlantic region.

The responsibility for determining what runs shall be protected by rail motor cars, and what type of car shall be assigned to such runs, is in the hands of the manager of the passenger service bureau. This man is thoroughly familiar with both traffic and operating problems, and his decisions are made only after careful study.

No rail motor car is assigned to a run until a comprehensive preliminary study has been made to determine its adaptability for the particular service in which it is to be used. In order to be absolutely sure, such preliminary studies have been continued, in some cases, over a period of a year, so that a complete picture of the traffic, under all conditions and in all seasons, might be obtained.

These studies cover every feature of the proposed operation, not only as to passenger, mail, baggage and express traffic, but freight traffic as well. The number of passengers boarding at the initial terminal, the number getting off and on at intermediate stations, and the number arriving at the final terminal, are checked daily over a long period. This information, together with a daily check of other traffic, provides data on the requirements from which the manager of passenger service determines whether or not a rail motor car could handle the run more economically than a steam train, and if so, the type of rail motor car best suited to the needs of the particular run.

How Operations Are Checked

After the car has been placed in service, its performance is checked carefully as to efficiency and costs. In this connection, it has been found necessary to pay considerable attention to the education of both the employees and supervisors to secure the maximum results from rail motor car operation. The runs are, of course, bid in by the crews on the usual basis. In many cases, the men who bid in the runs were more or less opposed to operating a rail motor car, but by patience and rendering every assistance possible to the motor car operators, the motor car runs have now, in fact, become favorites with the men. In some cases, also, a number of the supervisors were dubious as to the possibility of successful operation, but, except for the inevitable differences of opinion when a new run is in contemplation, the supervisors, too, have become convinced of the greater efficiency of the service.

The operation of each of the oil-electric cars is covered by a daily report, which is unusually complete in its details. These reports show all delays and time out of service, together with the reasons therefor and supply an adequate check of the

A Rail Motor Car and Its Train on the Canadian National

operation. Copies of them are sent daily to the regional operating officer and to the chief electrical engineer. After they have been checked, these reports are analysed and a monthly comparative summary of the performance of each car is prepared by the chief electrical engineer.

Statistical Summaries

Two separate summaries are prepared, one showing the six-cylinder oil-electric cars only, the other showing the four-cylinder and eight-cylinder cars. These reports show the following information for each car operated, comparative as between the cars, for the month involved, and in cumulative form for the previous months:

Motor car miles
Trailer miles
Days out of service:
  Chargeable to repairs
  Chargeable to transportation department
  Chargeable to development work
Complete failures
Delays
Minutes delayed
Total troubles
Gallons of fuel oil used
Average miles per gallon
Gallons per 1,000 ton miles
Gallons of lubricating oil used
Average miles per gallon.
Gallons per 1,000 ton miles.

In addition, a special summary is given, showing the total miles each car has operated since it was put in service, together with an analysis of the reasons for each day the car was not in service.

Monthly List of Itemized Troubles

A list of itemized troubles for each car is also prepared each month. This list comprises 63 items, and constitutes a complete history of all repairs made to each car. It is particularly valuable from a maintenance standpoint in that it is possible, when anything goes wrong with any car, to check back and find out just what difficulties have been encountered previously with the same car and what repairs were made.

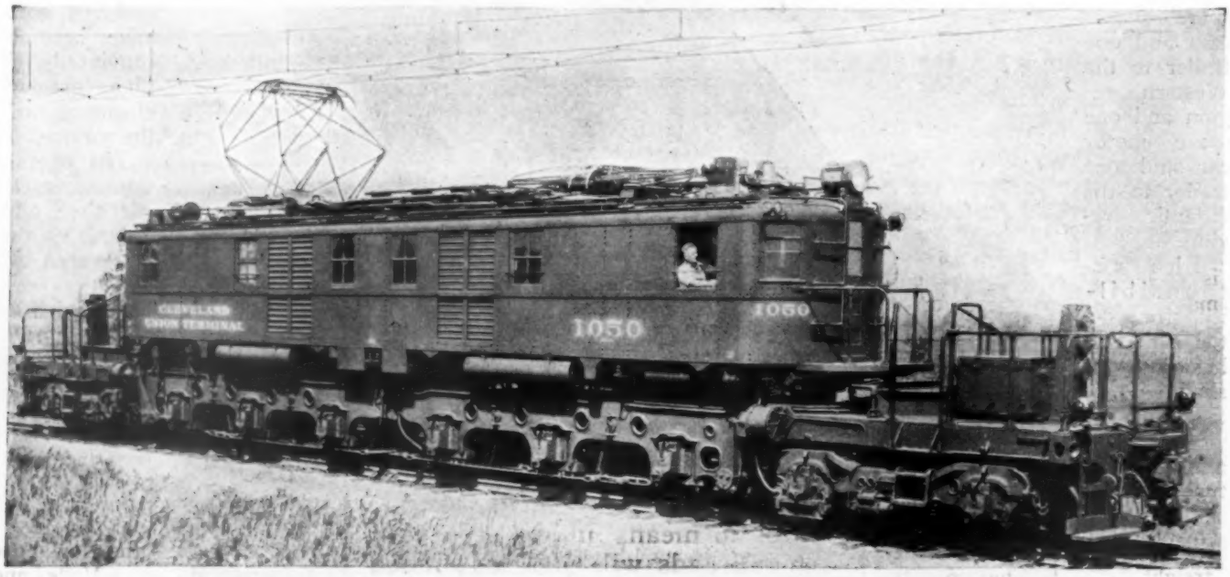
These monthly summaries are sent to everyone concerned in rail motor car operation, including the maintainers and operators of the car. A keen rivalry exists among them to produce the best record for their own car.

The operation of each car is also checked from the standpoint of costs. While every care is taken, by preliminary studies before steam service is supplanted by a rail motor car on any run to insure the success of such operation, traffic changes are watched and cost studies made, to insure the continued economic success of the operation.

Locomotive for Cleveland Union Terminal Completed

THE first of the 22 electric locomotives to be used by the Cleveland Union Terminals Company has been completed at the Erie, Pa., works of the General Electric Company. These locomotives which are being constructed by the American Locomotive Company and the General Electric Company, were described briefly in the *Railway Age* of August 25, 1928, page 345. Each locomotive weighs 204 tons, with 150 tons on the drivers, and is designed to handle the equivalent of seventeen 75-ton cars and will have a maximum speed of 70 miles an hour.

The Cleveland Union Terminals Company was organized for the purpose of building and operating a new passenger terminal in the city of Cleveland, Ohio. Because of the location of the new terminal and its approaches, it was decided at the start to establish an electric zone for the entering tracks on either side. This zone will include a total of 17 miles of route and approximately 60 miles of electrified single track extending from Linndale, Pa., to Collinwood, Pa. The Terminal Company is controlled jointly by the New York Central, the Big Four and the Nickel Plate and a portion of the electrified zone will be on the right-of-way of each of these railroads.



Class 2-C+C-2, 3000-Volt Direct Current Electric Locomotive for Cleveland Union Terminals Company

Container Service Approved in Principle

But examiner finds present and proposed rates unlawful and improvident—Would restrict service to eastern territory

ATTORNEY-EXAMINER Harry C. Ames, in his proposed report to the Interstate Commerce Commission in the container case (No. 21723 and I. & S. No. 3198) recommends the conclusion that container service for the interstate transportation of l.c.l. freight, subject to rates which are proper and lawful, is desirable in the public interest when applied to eastern territory. The term "eastern territory" as used in the report is defined to include St. Louis and Chicago and the territory east thereof and north of the Ohio and Potomac rivers to the Atlantic seaboard. In thus endorsing the principle of container service, however, the Examiner at the same time found that present and proposed container rates "are and would be unreasonable and unlawful in violation of section 1, unjustly discriminatory in violation of section 2, are plainly open to attack under section 3, and are not and would not be in harmony with the provisions of section 15a of the interstate commerce act."

He therefore continues to a concluding recommendation that "the findings as to the proposed tariffs of the eastern respondents are without prejudice to the establishment of container service in the territory hereinbefore indicated (eastern territory as defined above), subject to third class rates on the net weight of the container content and subject to the further proviso that in no event shall the container rate be lower than the contemporaneous carload rate on any commodity loaded in the container, the inclusion of such commodities in mixed container shipments to control the rates on the entire mixture."

Service Not Adaptable to Western Territory

The report defines "western territory" to include the points at which the Missouri Pacific proposes to establish container service. With reference to this it finds "It is clear that conditions in western territory . . . do not warrant the establishment of container service. The outlook in respect of the balance of empty to loaded movement is decidedly unfavorable and manufacturing and trade conditions do not indicate a need for or an adaptability to the service. . . . The better plan would be to try out the service in the east. . . . If it is successful and a real need arises for it in the west it can then be established." Because of the competitive conditions encountered in the movement of freight between Chicago and St. Louis, the Examiner suggested that container service should not at present be established for that particular movement, even though it falls within eastern territory as defined in the report.

Examiner Ames discussed at length the activities of the freight consolidating and forwarding companies and the status of these functionaries which figure so prominently in container shipping. He cited several decisions of the commission and the courts and from these found that the status of the forwarding company as a shipper has been definitely determined. In this connection he continues to say that "so long as container service is held out in the tariffs, the carriers operating it, even if they desired to, would be powerless to prevent a forwarding company from using the container, the same as any other shipper. Under the doctrine firmly established in the cases just cited, a carrier cannot make ownership of goods the test of its duty to carry."

Following the foregoing finding, however, the observation is made that "The forwarding company being a shipper, is not subject to regulation by this commission in respect of its rates, charges, regulations and practices. It is free, at least without fear of prosecution by the commission, to vary its rates to meet special conditions and is under no legal obligation to refrain from discrimination as between its clients."

Commission Cannot Dictate Type of Container

The report also discussed the advocacy of containers different from those now in operation with special reference to the small container proposed by Major Elihu Church (see *Railway Age*, February 16, page 421) and the large container now in use in terminal interchange service at Cincinnati advocated by Benjamin F. Fitch, president of the Motor Terminals Company, parent corporation of the Cincinnati Motor Terminals Company (see *Railway Age*, April 20, page 902). In this connection, however, the Examiner held that "It is not the province of the commission in an investigation of this character to recommend a particular type of container. Its purpose here is to consider the propriety of the service and if it is approved, the carriers should be left free to determine the type of container which they deem most desirable."

In a later reference to the present lack of interchangeability of the two containers now in use i.e. the L.C.L. container in use on the New York Central and Lehigh Valley and the Keystone Container in use on the Pennsylvania, the report

"Unless the railroads are prepared to adopt some plan of truck co-ordination which will provide a service comparable with door-to-door service of the motor truck it is becoming more and more apparent that much merchandise traffic will be diverted to trucks. And it is by no means improbable that the railroads will also lose much carload traffic."

states: "It seems perfectly clear that container operation should not attempt to go forward unless and until something is done to bring about uniformity and interchangeability of containers. To do otherwise is to shoulder the service with an operating handicap which is unfair and burdensome to it."

The proposed report opens with an outline of the scope of the proceeding and continues to a description of the service and a survey of its history. After defining the container as "an instrumentality designed, among other things, to facilitate and reduce the cost of handling less-than-carload freight," and setting forth its dimensions and capacity the Examiner continues to describe the service and the contractual arrangements which carriers have for the use of containers. He then proceeds to outline the reasons for the popularity of the service among users and leads up to the following discussion of the forwarder:

The Forwarding Companies

It is impossible to have an accurate conception of container service without considering the part played by the forwarding companies. The Universal Car Loading & Distributing Company, herein called the Universal, is the largest operator of containers. It handles about 75 per cent of the container traffic of the New York Central and from 90 to 95 per cent of that of the Lehigh Valley and Pennsylvania. . . . A witness for the New York Central estimated that the average less-than-carload billing item for that line would be "close to 200 pounds." It is for these reasons that the forwarding company comes into play. It gathers small shipments from individual concerns and after such concentration is in position to bill loaded containers to given destinations. Its profit is obtained from the difference between the container rates and the ordinary less-than-carload rates which would otherwise apply. Part of this difference it passes on to the shipper as an inducement to use its service. Its reductions to the shipper, generally speaking, are based upon varying percentages of the class rates, beginning with 10 per cent on first class, and scaling down to 4 per cent on fourth class.

The handling by forwarding companies of shipments in containers is substantially the same as that performed in the consolidation of less-than-carload shipments into carloads. But by reason of the fact that carload rates are subject to minimum weights much higher than those on containers, and the further fact that in many cases container service permits the shipment of articles which can not profitably be handled in box-car service, the activities of these companies have been increased.

> **"If the revenue retained by the forwarding company as a result of the container operation is justified it must be because it is relieving the railroads from expensive platform and billing services. Therefore when a large industry is equipped to use the container for its individual shipments, it must be that it is the beneficiary of a clear gift from the railroads. This because it is performing no service for the carrier and is doing nothing it would not do in connection with an ordinary carload movement."**

Consolidating Agency Necessary

Respondents concede that in order for the service to be successfully operated and to grow and thrive it is essential that a forwarding company or some similar agency intervene between the carrier and the owner of the goods transported. They have hopes that the public may be educated to the advantages of the service and may find it advisable to delay shipments until larger lots, to fit the container, accrue. But under present shipper practices, they concede that an inconsequential percentage of the traffic offered could profitably move in containers without the intercession of a consolidating agency. . . .

The forwarding company not only performs a concentration service at origin, but a dissemination service at destination. Each is as important as the other in the complete contemplation of the service. If a large wholesaler has 4,000 lb. of freight for one destination, but it is divided into 20 consignments, he could not use the container unless he had an agent at destination to deliver the shipments. The forwarding company is just as essential to him as it is to 20 different shippers at origin who have freight for one destination. A traffic witness for the New York Central, of long experience, testified that operation of the forwarding companies also benefits the railroads, in that it diverts much expensive merchandise business to carload service and results in a heavier car loading. This witness expressed the view that if the less-than-carload business handled by forwarding companies in New York were to be turned back to the railroads for regular service an embargo would result.

Charges Made by Universal

The Universal makes known its charges in the form of advertising circulars which it disseminates to a regular mailing list or to prospective customers. It advertises that it will cause to be transported between certain destinations freight of a described nature which may be tendered to it. Its usual advertising matter shows the railroad less-than-carload rates and its own rates for the various classes of freight. The reductions under the railroad's rates range, as stated, from 10 per cent or multiples thereof on first-class or higher, down to 4 per cent on fourth class. As a general rule, when the "reduced" bases apply the Universal collects and delivers freight only at its regular platforms. In some cities it operates pick-up and delivery service but when this is done it usually applies the regular railroad rates. That is to say, it sells its service to shippers on the savings it affords them on station-store-door cartage. But special circumstances arise, where it is necessary for it to depart from its ordinary "advertised" bases in order to attract a shipper's tonnage.

Other concessions which the record shows are being made by the Universal are of a more serious nature. Its vice-president appearing as a witness at the request of the presiding examiner willingly answered all questions put to him concerning the operations of his company. He stated frankly that it is not possible for his company to maintain a rigid basis of rates. It must, as stated, meet trap-car competition, as well as that of the motor truck, steamship companies, and other forwarding companies. He insisted that it was not the policy of his company to discriminate in its charges based solely upon the amount of tonnage to be gained, and that all shippers similarly situated were accorded the same basis of rates. He brought with him to the hearing rate sheets used at the New York station of the Universal in quoting rates to shippers. All of these rate sheets contained notations which indicated departures from the usual bases of rates. Although some of these notations were nothing more than notice to the station agent that certain rates had been made to include necessary cartage absorptions and the like, others indicated that certain clients of the company were to be given special treatment in various respects. For example, the Universal established a special commodity rate on dry goods, higher than its class rate, which would ordinarily apply, on account of the bulky packing. The rate sheets in the New York office, as well as manifests on file there, show that certain shippers were charged and paid the higher Universal "commodity" rates while others were charged and paid its lower class rates on the same commodity in the same character of package. . . .

Forwarder Activities Should Be Considered

There is no escape from the fact that forwarding companies are in position to discriminate as between shippers if they find it to their advantage to do so. . . . In a question of that nature it is manifest that it (the commission) should consider all of the possibilities of the operation, including the activities of the forwarding companies which, as stated, are an integral and necessary part of the operation.

The report next discusses the evidence for and against container service first in eastern and then in western territory. It includes herein tabular comparisons of revenues from on container movements with the same movements under regular l.c.l. class rates. The container cost studies introduced by the New York Central, Lehigh Valley and Pennsylvania are also explained (see *Railway*

Age, April 13, page 833). It then continues to criticize these container cost comparisons in the following manner:

An important criticism of the cost studies arises in the matter of container rental. This rental is 2 cents per loaded mile and 1 cent per empty mile per battery of 6 containers, for the L.C.L. containers, and one or more loaded containers per car constitute a loaded movement. The mileage basis for the Keystone container has not yet been fixed. The Lehigh Valley included in its cost study an item of $129 for container rental. No rental was included in the studies of the New York Central or the Pennsylvania, in the case of the former because of its contract right to use the L.C.L. container without rental, as explained, and in the case of the latter because it owns the Keystone container. If, in the studies of the New York Central and the Pennsylvania, the container service had been charged with the usual container rental the saving for the New York Central would have been entirely eliminated and the Pennsylvania would show an actual loss of $61 in net revenue on the container traffic. These lines are not criticized because of their failure to charge this rental. They were attempting to show actual costs for their own operations. But the commission must here determine the possible effect of container rates for all lines which will have to pay the customary rental.

From a tabular comparison of savings in expense over box car operation with reductions in rates the report deduces that:

It will be observed that for hauls ranging roughly between 150 and 400 miles the carriers are turning over to the forwarding companies more than they are saving in clerical and billing costs. For the longer hauls, the reduction below the R 25 rates is materially smaller. It seems, however, that if comparison were to be made between the container rates and the class rates on the traffic which, based on experience, has sought the container, the reductions would be considerably greater. . . .

It is obvious why shippers who can use containers for their individual shipments should be enthusiastic advocates of the service. In some instances their savings on packing alone are enough to pay for the necessary trucking of the container. Savings in freight charges are substantial. One shipper from New York to Baltimore had been using the Clyde Line and paying its less-than-carload rate of 34 cents on his commodity. He now uses the container at a rate of 17 cents. One concern in Cleveland saved $9,829.50 in freight charges in 13 months. As stated, many of these witnesses testified that the container offers sufficient attraction without any reduction in rate. Clearly, therefore, a substantial rate reduction makes it doubly attractive. For the purpose of this report we may accept it as proved that the shippers who are using container service are in favor of it and would like to see it extended to other points so that their use of it might be increased.

> **"The container has merit as a facility of carriage. The better plan is to let that merit be the urge to its use. If it fails of that purpose then the container should fail. To let it prove its worth only by virtue of an unnecessary sacrifice of revenue is to disavow its mechanical merit instead of allowing the shippers to buy and pay for it. The fact that shippers who obtain substantial rate reductions use it or desire to use it proves nothing. Its desirability as an agency of transportation will be proved only if and when it is chosen over other facilities on a fairly comparable basis of rates."**

Main Carrier Objection Is to Rates

The principal objection to container service on the part of carriers not operating it, goes to the rate structure. In fact, the carriers which do operate containers do not present a united front in support of the existing rate basis, the Pennsylvania coming forward on brief with a proposal to charge second-class rates, 10 per cent under second-class rates, and third-class rates on consignments weighing respectively 4,000 pounds or less, more than 4,000 pounds and up to and including 7,000 pounds, and over 7,000 pounds up to and including 10,000 pounds.

Desirable Tonnage Seeks Container

Another objection to the container is that it has caused a selection of desirable tonnage for container traffic, leaving the bulkier and less desirable traffic to the box cars. The average loading of containers as disclosed by the cost studies of representative movements are 3.14 tons for the New York Central and 3.64 tons for the Pennsylvania. The containers now in use have a loading capacity of 438 cu. ft. The container now in use for interchange and station-to-station service of all freight to or through the Cincinnati terminal has a loading capacity of 850 cu. ft. The president of the company operating at Cincinnati, who has made a keen study of loading conditions, testified that the average loading of containers at Cincinnati on the general run of less-than-carload freight with no selectivity, is 3.7 tons. He stated that he would be willing to haul free for the railroads any freight in excess of four tons which they could load in his container provided the freight were loaded as received. He testified that in his opinion the average container loadings shown by the various railroads could not be attained except through deliberate solicitation by the forwarders of the heavy-density freight. . . . It seems clear that in attaining the average container loads shown there must be a selection of tonnage.

Container-Mile Rates Would Cause Class Rates Reductions

A witness for the Detroit & Cleveland Navigation Company, which has operated steamship service on merchandise freight between Buffalo and Detroit for 26 years, and between Cleveland and Detroit for 60 years, testified against the level of the container rates. This company has no quarrel with container service, as such, and concedes that if it is efficient and economical it must devise some means to meet it or else retire from business. It contends, however, that container rates if applied, as proposed, in central territory, will cause reductions in class rates which are not justified by any economic or competitive standard.

Here is included a tabular comparison of revenues from various class rates with those which would accrue under the container rates for the same traffic and the examiner proceeds to discuss the effect of the proposed container rates on this steamship operator. Following which, he continued:

Operating witnesses for certain of the eastern roads opposing container service expressed doubt of its economy, having in mind the car-supply situation on their lines. Their composite view is that the container would not be suitable for handling all merchandise freight so that it would be necessary to retain the box car to handle bulky and less desirable freight at an increased unit cost; that the container would tend to reduce the already low average loading of merchandise freight; that the present system of handling merchandise freight affords loading for box-car equipment which would otherwise return empty; that the container operation would not result in any diminution of freight houses and freight yards, but on the contrary would only add the burden of providing additional yard equipment in the form of cranes and tracks; and that due to the wide variation in weight to measurement of the average run of merchandise freight the box car is the most desirable facility for its transportation.

The Level of Rates

We will now consider the level of the rates. As indicated, container rates in eastern territory begin at 5 cents per mile for 4,000 pounds or less, and ¼ cent per mile is added for each increase in weight of 500 pounds or less, resulting in a maximum rate of 8 cents per mile for the maximum loading of 10,000 pounds. A minimum charge of $8.25 is provided, which would cover hauls of 165 miles at the 5-cent rate and 103 miles at the 8-cent rate.

In a table which the report included container rates, reduced to cents per 100 pounds, are compared with class rates for various movements. And then says the report:

These comparisons emphasize the criticism of the Detroit and Toledo Chambers of Commerce that the inflexible gradation of container rates bears unduly upon long-haul traffic. For example, between Baltimore and Philadelphia, 113 miles, the 10,000-lb. container rate of 9 cents is 8 cents per 100 lb. lower than the contemporaneous sixth-class rate of 17 cents. Between Pittsburgh and Buffalo, 271 miles, the similar container rate is 21.7 cents per 100 lb. as against the sixth-class rate of 21.5 cents. Between Cleveland and New York, 620 miles, the similar container rate is 49.6 cents per 100 lb., which falls between the R-26 rate of 53.5 cents and the fourth-class rate of 47 cents. Between New York and Louisville, 906 miles, the similar container rate of 72.5 cents, is slightly lower than the R-26 rate of 75.5 cents. We thus have shippers paying for short hauls, rates about one-half of sixth class whereas shippers of the same commodities for longer hauls pay rates which approximate R-26. It is one thing to say that the container rate is a thing apart from the class rates. It is quite another to make the shipping public believe it. The class rates are more or less accommodated to commercial and competitive conditions as they exist. At least, business has grown up under them. To change the rate relationship between the long-haul shipper and the short-haul shipper in cents per 100 pounds to the former's disadvantage is just as hurtful under the guise of container rates at it would be under class rates. . . .

Plays Havoc With Existing Grouping

The container-rate scheme also plays havoc with existing grouping. Class rates to St. Louis are the same from Boston and New York. Under the proposed container rates Boston would be compelled to pay from 10.4 cents to 16.2 cents per 100 lb. more than New York. This disruption of grouping also occurs as between interior cities. For example, Rochester and Syracuse now take common rates to a wide destination territory. The proposed container rates would convert this parity into disadvantages to Syracuse on westbound business ranging from 6 cents to 10 cents per 100 lb.

The container rates for comparatively short hauls are strikingly low, as measured by the class rates. Class rates in official territory play a far more important part in moving carload traffic than in any other section of the country.

Here is included a tabular comparison which indicates that, in container service, the railroads and the forwarding companies receive almost the same amount of revenue for their respective services. The examiner then asks: "What do they do to earn it?" He finds as follows:

Roughly, then, it will be seen that what the railroad escapes in handling expense is:

1. The necessary billing in respect of 15 shipments as against 1 shipment.
2. The platform expense entailed in handling 15 shipments, including notification of arrival, etc.
3. The task of making collections and auditing service on 15 shipments, as against 1 shipment.
4. Possibly some saving in switching expense, due to the fact that spotting container cars at the forwarding company's platform may be less complicated than freight-house spotting, and the further fact that due to heavier loading of the container cars fewer of them are necessary.

Real Shipper Receives Little of Carrier Sacrifice

Respondents will urge, of course, that they are not responsible for and can not control the forwarding companies revenues. Neither can this commission. The fact is, however, that the container rate scheme makes this revenue possible. And the question is whether it is desirable in the public interest to publish and maintain a rate basis low enough to make it possible, when the real shipper receives so little of the sacrifice. . . .

Respondents which operate containers also stress the point that if in spite of the substantial reductions under less-than-carload rates, and the substantial amounts retained by the forwarding companies as gross profits, the net revenue received by them is greater, no one including this commission has any reasonable ground for objection, because the net revenue is really the test of prosperity. These contentions assume, of course, that we may separate container rates from the entire scheme of rates and keep them immune from use as comparisons. Such a premise is impossible. So long as there is no substantial difference in the service rendered in the transportation of containers and that rendered in respect of straight carloads of the same commodities shippers will regard these voluntary reductions as an open confession that all carload rates reduced by container rates are too high.

Western Territory

The Missouri Pacific is the only carrier which is proposing to establish container service interstate in the west. Its reasons, like those of the eastern lines maintaining the service, were a desire to meet short-haul truck competition and to improve its methods of handling less-than-carload freight. In respect of the first condition it is immediately apparent that motor-truck competition is not present in serious proportions as against any of the movements proposed to be covered by container rates with the possible exception of Kansas City. No claim is made that truck competition exists in any substantial degree between St. Louis and Texas points, or between St. Louis and Little Rock, Denver, or Pueblo. . . .

Vigorous Carrier Opposition in West

There is vigorous carrier opposition to the inauguration of container service in the west and southwest, and the preponderance of commercial testimony is also against the container. It is fair to state, however, that opposition to the container service is not so much against the container as a piece of equipment as it is against the rates which are proposed for it. . . .

> **"One need not be an alarmist to predict that container rates for general application on the basis proposed by respondents, other than the Pennsylvania, would result in requests for reductions in carload rates on every commodity which moves in the containers—Surely this commission can not, and the carriers themselves should not, be unmindful of the possibilities of rates of the measure and character proposed."**

To show that the Southwest is not developed trafficwise to an extent which would justify container service, the carriers refer to the daily less-than-carload movement of three railroads, the Katy, Frisco and Cotton Belt, between St. Louis on the one hand and North Little Rock, Ark., and Dallas, Fort Worth, San Antonio and Houston, on the other hand. The southbound daily movement, including all merchandise whether adaptable to containers or not, ranges from 2,425 pounds to 7,730 pounds, and the northbound movement from 32 pounds to 2,612 pounds. The tons of less-than-carload freight originated and carried per mile of road operated for the year 1927, were 207 and 519 tons for the Lehigh Valley, 343 and 537 tons for the New York Central, and 403 and 585 tons for the Pennsylvania, as compared with an average of 88 and 135 tons for the carriers in the western district. The Missouri Pacific originated 76 tons and carried 128 tons per mile of road in 1927.

Protesting carriers also urge that commercially the southwest is not a territory such as would support container service. . . .

The preponderance of empty box-car movement in the western district is westbound and southbound. Statistics of class-I railroads in that district show that for the 7-years' period ended December 31, 1927, the eastbound box-car movement was 33 per cent empty to loaded, as compared with 80 per cent, empty to loaded, westbound. On the other hand, the preponderance of less-than-carload movement is westbound and southbound and this enables the carriers to utilize westbound and southbound box cars which would otherwise move empty. It is urged that injection of containers into the western transportation system would not only result in an unbalanced container movement but would also aggravate the already heavy empty movement of box-car equipment. This contention is borne out by statistics of record.

Contrary to the favorable picture of container service painted by shippers and organizations in "eastern" territory, the great preponderance of testimony by shippers and organizations in the west, is against the container. Most of the opposition can be traced to the interior jobber. The southwest, to an overwhelming extent, and western trunk-line to a great extent, are jobbing territories. In *Consolidated Southwestern Cases, supra,* at

pages 210, 211, the commission had this to say of commercial conditions.

Owing to the small development of manufacturing in the Southwest most of the commodities originate at points in other territories, principally the western, eastern and southeastern defined territories and trunk-line territory. Jobbers doing business in Kansas-Missouri territory and the Southwest are located at numerous points throughout those territories and at the Missouri River cities and the gateway points, and to some extent at cities beyond . . . At practically every town and city in Kansas-Missouri territory and in the Southwest with a population of a few thousand or more are located jobbing houses. The jobbing at the smaller points is principally confined to groceries. At the larger cities such as *Wichita* and Hutchinson, Kans., Joplin, Mo., Oklahoma City, Muskogee, Tulsa, and Ardmore, Okla., Fort Smith and Little Rock, Ark., Shreveport, La., *Dallas, Fort Worth, San Antonio* and *Houston, Tex.*, and others, are located jobbers of drugs, agricultural implements, hardware, paints, dry goods, iron and steel articles, beverages, . . . and other articles, as well as of groceries, . . . For example, jobbers of dry goods, drugs, hardware, and similar articles at the Missouri River, at gateway cities, and at such cities as Oklahoma City, *Dallas, Houston*, and others of the larger cities in the territory distribute or desire to distribute, practically throughout Kansas-Missouri territory and the Southwest. Each jobber is in direct competition with jobbers in contiguous towns. . . . The smaller jobbers also compete with the larger jobbers shipping from the larger cities within and without the territory.

. . . In seeking a location for a jobbing house or factory one of the first things considered is the freight-rate situation. There is keen rivalry between towns in the Southwest for the location of new industries to meet the increased needs of the growing population.

There is thus an endless chain of actual and potential competition in the distribution of goods on class rates, not only within the territory but from and to the border cities and cities beyond. Towns paying for like services higher rates than others, or paying rates higher, distance considered, than others, are placed at a disadvantage and often are deprived of their natural advantages of location. Until there is brought about a fairly uniform adjustment which will afford substantially equal rates for equal services and rates properly proportioned as between long hauls and short hauls, complaints of discrimination and prejudice will continue to arise. (Italics indicate cities where container service is proposed.)

Responsive to those needs the commission after exhaustive hearings and in one of the most comprehensive reports it has ever issued prescribed bases of class and commodity rates designed to remove existing inequalities and discriminations. It fixed first-class or column-100 rates and for other classes and for certain specific commodities it fixed percentage relationships to the column-100 rates. It also provided for the integrity of the adjustment so fixed by requlring that any departures from the bases found lawful should be uniformly applied at all points covered by the findings. It follows, therefore, that if and to the extent that the rates proposed by the Missouri Pacific constitute departures from the findings in that report, the labor there done is undone.

It has been pointed out that the Southwest is a jobbing territory. It is also essentially an agricultural territory. Due to the latter condition credit arrangements are based on the theory that the farmer receives his principal income upon maturity of his crops. As a consequence the smaller retailer must "carry" the farmer on an annual basis, and very often the jobber must do the same thing for the small retailer, and the banks for the jobber. The jobber owes his existence to the distribution of goods in small lots, which he has received in large lots. And a considerable part of his prosperity depends upon the spread in freight rates as between large and small lots. Jobbers who testified conceded that it would be to their interest to have extremely low carload rates and extremely high less-than-carload rates in order to discourage retailers from buying direct in small quantities from the centers of production. It is plain, therefore, that any proposal on the part of the carriers to lower freight rates on the small unit of shipment would meet with decided opposition from interior jobbers. Many of the witnesses conceded that there would be few instances in which the small retailer would be in position to handle as much as 4,000 pounds or upward of a given commodity. But they fear that the container would be availed of by them through the intercession of the freight forwarder. They also fear that northern and eastern jobbers and chain stores will dominate the western situation and point out that those interests will be less sensible of or sympathetic with the peculiar credit conditions of the southwestern agricultural country already adverted to.

Substantially the same motives prompted the western jobbers to oppose rule 10 of the consolidated classification wherein it is permitted to ship mixed carloads on basis of the highest rates and minima applicable on any article in the mixture. . . . The situation in respect of the container offers a much more serious threat to the interior jobber than did rule 10. In the case of the container a single commodity may be shipped and when lots of 10,000 lb. are handled, every less-than-carload rate higher than class A is cut by the container rate, and in respect of every carload rate, class A or higher, the rate is cut or the minimum weight reduced, or both.

Missouri River cities, such as St. Joseph, Mo., and Atchison, Kans., are opposed to container service because they fear that it will make their competition with St. Louis all the more difficult. They point out that the heavy transfer or interchange tonnage handled at St. Louis would permit the shipment of more and heavily-loaded containers from that point than the smaller cities could ever hope to approximate, even if they were accorded container service. On traffic to Wichita, Kans., for example, St. Joseph now enjoys rate advantages over St. Louis, of 60 cents, 51 cents, 42 cents, and 33 cents, respectively, on the first four classes. The proposed 7,000-lb. container rates of the Missouri Pacific would result in an actual rate disadvantage to St. Joseph of 14 cents on first class, and reduce its advantages on second and third classes to 3 cents and 19 cents, respectively.

Lawfulness of Container Rates

The lawfulness of the rates is next discussed with the inclusion of references to decisions upon which the finding that they are illegal is based. The report continues:

It has been shown that the container rates in many instances are lower than the carload rates on similar commodities moving in ordinary equipment. No one contends that carload service is any more burdensome than the service rendered on the container. In both instances there is a single unit of transportation from one consignor to one consignee, on one date and on one shipping order. In both instances the consignor loads the freight into the carriers' equipment and the consignee loads it. In both instances switching at origin and destination requires one spotting of the car. The only possible difference lies in the fact that on carload traffic generally it is sometimes necessary for the line-haul carrier to absorb off-line switching charges at origin or destination or both. But such absorptions would be a natural result of container service if it were to become universal. Witnesses for the carriers operating the service freely concede that it would not be desirable as a general proposition, to cut the carload rates. They recognize that fact as one of the inherent weaknesses of the adjustment. In spite of it, there are instances where container rates are lower than the lowest class rates in official territory, and these instances occur in traffic between cities of primary importance. There can be but one logical result of such a situation. The shipper in carload lots will complain that his rates for minima of 24,000 lb. or upward, can not reasonably be higher than rates for the same freight, between the same points, in container lots ranging from 4,000 to 10,000 lb. And in view of the fact that these differences could not be justified on the basis of cost-of-service it is not at all clear where the carriers' defense would lie. . . .

> **"Even if it be conceded, which it is not, that the cost studies prepared and introduced by the carriers operating container service, show everything that is claimed for them, i.e., that the net revenue from the service is greater than it would be on the same commodities handled in less-than-carload service, it could not be conceded that respondents have justified the container rates."**

Bearing on Hoch-Smith Resolution

There is another circumstance in connection with the level of these container rates which should not be overlooked. By the so-called Hoch-Smith resolution which became a part of the law which the commissioner administers, on January 30, 1925, it has been directed to enter into a "thorough investigation of the rate structure of common carriers * * * in order to determine to what extent and in what manner existing rates and charges may be unjust, unreasonable, unjustly discriminatory, or unduly preferential * * * and to make in accordance with law, such changes, adjustments, and *redistribution* of rates and charges as may be found necessary to correct any defects so found to exist." It is also directed "in view of the existing depression in agriculture * * * to affect with the least practicable delay such lawful changes in the rate structure of the country as will promote the freedom of movement * * * of the products of agriculture affected by that depression, including livestock, at the lowest possible lawful rates compatible with the maintenance of adequate transportation service." * * * It follows that under the mandate that rates and revenue must be redistributed in order that an adequate system of transportation may be maintained, while at the same time effecting reductions where necessary in order that traffic may freely move, both the carriers and this

commission may be expected to cast about for some class of traffic which might properly be expected to bear higher rates. Normally such traffic should be found among the higher-priced luxuries and valuable articles which now move at less-than-carload rates. The container rates scheme results in reducing the rates on these commodities in many instances below the level of the lowest class rates which move basic and low-grade commodities in carloads. . . .

In considering the lawfulness of the container rates with this section (Section 2) in mind, it should be recalled that the rates in cents per 100 lb. become lower as the weight of the consignment increases. . . .

These marked differences in rates per 100 lb. on the more heavily-loaded containers can not be justified on the theory that they are alternative rates based on higher minima. Such alternative rates are established in some instances by the carriers and permitted to remain in effect by the commission. . . . In all of those cases, however, the alternative bases were either already in effect, or the peculiar character of the commodity justified the basis. If the commission should here approve 12 alternative rates for a total graduation of 6,000 lb. in weight, each rate based upon an increase of only 500 lb., it is obvious that no alternative basis, hereafter proposed, could very well be denied. * * *

Assuming that container service becomes universal there will be shippers who can load only 4,000 lb. who will compete with shippers who can load 10,000 lb. and thereby secure much lower rates. Moreover, a carload unit and a container unit of the same commodity, may move on the same train from the same point of origin to the same destination, under circumstances and conditions of transportation and carriage which are conceded to be substantially similar but where the container shipment will be accorded a lower rate. Inasmuch as rate differences not justified by the "matter of carriage" are prohibited by section 2 as interpreted in *Wight* v. *United States*, 167 U. S. 512, 518, it is difficult to conceive of a more positive basis for an allegation of unjust discrimination. . . . At present the shipper of 1,000 lb. of freight is on a rate parity with the shipper of 10,000 lb. of freight. Under the proposed container rates the latter shipper will secure rates which are in many instances lower than carload rates.

No Discrimination in Packing Modifications

The examiner next discusses the possibilities for discrimination in the modification of packing requirements on goods shipped in containers but finds:

This record leaves no doubt that the modification in packing requirements is fully justified in so far as transportation in containers is concerned, that the handling of merchandise freight in container and box-car service is sufficiently different as to warrant a difference in treatment in respect of packing, and that the concession thus made is reasonably related to the advantages accruing to the carriers from the container operation.

Whether the practice of charging for the gross weight of package and content on commodities handled in carload service is unjustly discriminatory as compared with the practice of charging only for the net weight of the commodities handled in steel containers is a closer question. . . The justification, if any, for a modification of packing requirements in respect of the two classes of transportation must lie, therefore, in the difference in the facility. There is not a scintilla of evidence in this record that any rule or rules imposed by the carriers in respect of the packing requirements on traffic handled in carloads is or are unreasonable. If reasonable, the package required in carload shipments becomes a part of the shipment for which the shipper must pay. *Mathieson Alkali Works* v. *B. & O. R. R. Co.*, 85 I. C. C. 728, 732. Certainly if carriers may make reasonable differentiation in rates or ratings based upon haulage in different types of containers when the differences are not disproportionate to the differences in transportation conditions. . . It would certainly follow that they would lawfully differentiate as to packing requirements. * * *

Summary

Upon careful consideration of all the evidence and the briefs and argument in support thereof three propositions stand out. They are:

(1) That subject to certain suggestions container service as now operated and as proposed to be extended in eastern territory is desirable in the public interest, except

(2) That the rate structure applicable to it is wrong in principle and unlawful, and

(3) That the present conditions in western territory do not warrant the establishment of the service at this time.

There is no question that the container is a splendid piece of equipment. The one item of elimination of loss-and-damage claims on the traffic handled would recommend it. In the entire history of its operation, 7 years on the New York Central, over 1 year on the Lehigh Valley, and about 8 months on the Pennsylvania, computed as at the time of the hearings, not a single claim for loss and damage on container traffic had been presented.

Why Does Not Container Sell Itself?

In addition, the container has the advantage of saving much to the carriers in the way of billing costs and platform expense, and does much to relieve existing freight houses from actual or threatened congestion. In respect of motor-truck competition the record shows that the container has recaptured some traffic. But it does not show that serious truck competition exists in respect of all the movements proposed to be covered by the rates. As stated, witnesses for several large shippers testified that they would use containers even though they had to pay the regular less-than-carload rates. They indicated that the advantages accruing to them through elimination of packing, expedition in service, and the knowledge that their shipments would arrive at destination assembled in one lot put container service at a premium. But with all of these advantages and all of this demonstrated superiority as a piece of railroad equipment, question immediately arises: Why should not the container sell itself to the shipping public without such substantial reductions in the rates? It may have been necessary, in the introduction of this service, to make radical concessions, but with seven years' experience behind it over one of the largest carriers in the country and with the publicity which has resulted from this investigation the wisdom of too much sacrifice in revenue may well be doubted. * * * It is clearly anomalous to insist that container service offers so many operating and shipping advantages and then to insist with equal force that it can not be established or operated except at a sheer sacrifice of revenue. The great majority of shippers who are using containers do so through the medium of a forwarding company to which they pay charges ranging only from 4 per cent to 10 per cent under class rates up to first class. Granting that the majority of shippers could not use containers without resort to some agency of consolidation, it should not be necessary in order to encourage participation of such an agency to make revenue reductions which directly and in their relation to other rates constitute a menace to the entire rate structure. Clear and unbiased thinking points to the desirability and efficiency of the service. The same sort of thinking is repelled by any suggestion that it should be established on what is certain to be a dangerous level of rates.

Recommended Conclusions

The commission should find:

(1) That container service for the interstate transportation of less-than-carload or merchandise freight, subject to rates which are proper and lawful, is desirable in the public interest.

(2) That the present interstate rates published by the New York Central, Lehigh Valley and Pennsylvania, and the interstate rates proposed to be established by the two lines first named and certain of their connections, are and would be unreasonable and unlawful in violation of section 1, unjustly discriminatory in violation of section 2, are plainly open to attack under section 3, and are not and would not be in harmony with the provisions of section 15a of the interstate commerce act.

(3) That the proposed interstate rates of respondent, Missouri Pacific, would be unreasonable and unlawful in violation of section 1, unjustly discriminatory in violation of section 2 and would not be in harmony with the provisions of section 15a of the interstate commerce act.

(4) That the tariffs of the eastern respondents in which they are proposing to extend container service throughout central territory and the tariff of the Missouri Pacific proposing to establish container service in western territory, as herein defined, are not justified and will be required to be canceled.

(5) That the findings as to the proposed tariffs of the eastern respondents are without prejudice to the establishment of container service in the territory hereinbefore indicated, subject to third-class rates on the net weight of the container content and subject to the further proviso that in no event shall the container rate be lower than the contemporaneous carload rate on any commodity loaded in the container, the inclusion of such commodities in mixed container shipments to control the rates on the entire mixture. The commission should prescribe this basis as maximum and minimum.

Cost Accounting Study Favored

Commissioner Eastman in proposed report on accounting revision recommends appointment of committee

THE Interstate Commerce Commission has made public a proposed report, prepared by Commissioner Eastman, on the subject of the general revision of accounting rules, ex parte 91. Briefs and exceptions to the report may be filed up to November 1. A large part of the report is given over to a discussion of cost accounting. The Commissioner, however, does not recommend the adoption of this form of accounting at the present time but proposes the establishment of a committee upon which the railroads, the state commissions, the National Industrial Traffic League, the Taylor Society, and the commission itself would be represented, this committee to study cost accounting further and report on it at a later date. In the meantime only a few changes in the proposed classification of accounts are recommended.

The report describes briefly the so-called "alternative plan" presented by J. W. Roberts as witness for the National Industrial Traffic League, the cost accounting plan presented by L. R. Bitney, railroad cost accounting as practiced by the German Reichsbahn and the evidence presented by the Taylor Society. Objections to the "alternative plan" raised by the railroads are summarized as follows:

Railroad Objections to N. I. T. League Plan

1. It will not provide the carriers with yardsticks for measuring economy of operation.
2. It requires basic data, voluminous and unwieldy, to be compiled currently, although such data would not avoid the necessity for special cost studies and field investigations.
3. It would abnormally increase the number of possible accounting errors, making necessary the employment of higher-grade men at larger salaries and increased supervision.
4. It does not, as a general rule, provide the necessary bases for making apportionments to the three functional groups where combination service is involved.
5. It involves a so-called scientific study of a representative number of cars, of each type, on a representative number of carriers to arrive at proper bases for distributing car repair expenses among the three functional groups, whereas such a study could only be made at stupendous expense and would not be conclusive, when made, because of the instability of operating conditions.
6. It would produce only average expenditures by districts for nine cost services, and these averages would be predicated principally on arbitrary allocations necessitating prorate after prorate, which would create unending difficulties.
7. It would not produce costs of particular commodities transported, or even of commodity groups.
8. It can not be accepted as a cost accounting plan that could in practice be applied to railroads, because it is replete with both arbitrary and undefined bases for expense allocation.
9. It destroys the identity of certain expenditures now covered by specific accounts that are of prime importance, i. e., the accounts in the maintenance of way group covering roadway buildings, shop structures, power plant buildings, etc.
10. It refers to the necessity of data in regard to the manufacturing operations of the railroads, but makes no provision for such data.
11. It suggests new statistics for the purpose of allocating expenses, the compilation of which would require vast clerical energy and expense, e. g. speed gross ton-miles, allocated car foot space, gross ton transfer miles, and the like.
12. It would disarrange and distort for comparative purposes the component parts not only of general departmental accounts, but also operating ratios, by such procedures as allocating certain structural maintenance to transportation and taxes to expenses.
13. It provides that taxes and rents (including equipment rentals) shall be distributed to each maintenance primary account, without indicating bases for such distributions.
14. It provides that the cost of transporting materials and employees for company use shall be accounted for, without indicating how the basic data are to be secured or the costs ascertained.
15. It would inflate expenses in the transportation group unwarrantably by distributing overhead expenses on the basis of labor charges only, thereby eliminating all material consumption as a basis of distribution. Material contributes to overhead expenses, but its consumption is negligible in the transportation group as compared with the maintenance groups of expenses.
16. It would interfere seriously with the meeting of mandatory schedules for closing of accounts, owing to the multiplicity of interlocking common and clearing accounts.
17. It could ultimately produce only arbitrary results at prohibitive expense which would be unwarranted and useless.

The report proceeds to discuss the desirability of cost accounting (1) from a standpoint of managerial requirements and (2) from that of regulation. It concludes that it may be doubted whether the commission would be justified in imposing a change in accounting solely as a managerial measure, but could do so if the proposed change would aid public regulation. The great use of cost figures in rate cases is cited and the following questions are raised:

1. Has it been shown that there are practicable and reasonably accurate methods of apportioning the very numerous items of railroad expense which are incurred in common for two or more, and usually several, services?
2. Has it been shown, even if there are such methods of apportionment, that continuous routine cost accounting could be imposed upon the railroads without additional expense, combined with possible loss in employee efficiency, out of proportion to the usefulness of the results which could be achieved?

I. C. C. Accountants Report on the N. I. T. League Plan

The following report on the "alternative plan" by one of the commission's accountants is then presented:

It has not been the general practice of carriers to record the cost of classified repairs by individual cars nor to record the cost of such repairs by classes of cars. The additional labor of maintaining such records would be very considerable.

Men who are engaged in inspecting and in light repair work upon cars often give attention to a large number of cars each day. It would hardly be practicable to assign their wages according to the classes of the cars upon which they are employed. These running repairs, of course, could be prorated among the various classes of cars provided the classified repairs were kept separately by classes of cars, and the total cost by classes of the classified repairs be used in prorating the cost of running repairs.

The Alternative Plan provides for the maintaining of a unit record of classified repairs to freight cars. While the expense involved in keeping the detail records must be assumed to be quite large, no accurate information as to the total cost of such work is available.

No convincing test has been made to determine the benefits which may be derived from such detailed information. It may be that a study of the subject will indicate that an entirely different method of gathering the information will produce more satisfactory results.

A primary requirement of financial accounts is that they should be of such character as to permit the completion of the accounts and the publication of the result for each fiscal

period within a reasonably short time after the close of the period.

There are approximately 300 primary and initial clearing accounts (Exhibit 2, pages 1 to 5) contained in the Alternative Plan. The detail involved in stating these accounts is too great to be accomplished without substantial delay in the publication of the returns for each fiscal period.

On account of the manner in which the charts of operating expense accounts are prepared, it is not practicable to ascertain the exact number of subdivisions of functional, common and clearing accounts contemplated under the plan, but the approximate total number of main and sub-accounts, as well as can be determined, is shown by general groups or general accounts below:

General accounts	Principal accounts			Subdivisions of all accounts	Grand total, principal, and sub-accounts
	Functional	Common	Clearing		
Maintenance of way and structures—Rail Line	30	7	8	381	426
Maintenance of equipment—Rail Line	..	49	3	1,072	1,124
Conducting Transportation—Rail Line	85	7	..	13	105
Traffic—Rail Line	5	7	..	49	61
Transportation for Company service—Cr.—Rail Line	..	2	..	6	8
Incidental Operations—Rail Line	..	12	..	216	228
Water-line operations	30	8	..	108	146
Motor-line operations	33	8	..	94	135
General overhead expenses	..	9	..	27	36
Total	183	109	11	1,966	2,269

It is not possible to definitely outline the procedure the sponsors of the Alternative Plan have in view for the development of service performance costs. As well as can be ascertained the proposed procedure is to catch all expenses currently at their source, assigning direct to individual services, consistently as far as possible, those expenses which are peculiar to such services. "To further this direct assignment, the *intended or assigned* purpose of property and performance is to be consistently recognized, using reasonable judgment in classification in the face of incidental co-usage, co-benefits and co-responsibility." In the case of spasmodic incidental co-usage, etc., preponderance would govern. Where the expenses relate to joint-use, joint-benefit and joint-responsibility, the services involved are to be identified. For this purpose, the use of symbols is also suggested to indicate a combination of individual services and what those services are.

Stress is laid upon the importance and necessity of matching up the statistics with the expenses to be analyzed and classified, and in this connection whatever lack may be found in available statistics for breaking up joint expenses and apportioning them to the services involved is to be supplied by additional requirements. Some idea of what is contemplated in this direction, the sum total of which is greatly in excess of present statistical requirements, is indicated by the statistical bases suggested for dividing the various expenses shown in the chart of accounts. From an examination of these suggested bases, without going into detail, it would appear that some are reasonable for the purpose, some are questionable for one reason or another, some are impracticable, some would require elaborate special studies, the results of which would be of doubtful value for general use, and as to others it is not clearly understood what is intended. However, assuming all of these to be suitable for the purpose for which intended, it is not apparent how the statistical data contemplated can be provided in such detail as to properly match up with the innumerable joint service expenses to be partitioned.

There are no means of determining to what extent accounting costs and other costs incidental thereto would be increased under the proposed plan over those now incurred under the existing accounting procedure. This could only be approximated perhaps by accounting experts after the plan is in its entirety and the statistical requirements in connection therewith had been fully set forth and considered and the general practicability of the procedure determined. In order to make the numerous subdivisions of the expenses, many additional kinds of statistics not now kept would also be required, some of which would necessitate special studies of elaborate character. For instance there are no acceptable bases available for dividing the maintenance expenses of the 7 types of freight-train cars and the 15 types of passenger-train cars between the Line-Haul, Station and Train-Terminal functional services, and it is, therefore, proposed that a scientific study of a representative number of cars of each kind on a number of representative carriers should be made to determine the responsibility of the three functional services for such expenses. Leaving out of consideration the propriety of applying the results of such a study to the division of the car maintenance expenses between functional services on all roads, the costs of making a study of this magnitude would constitute a necessary part of the additional accounting expense.

In addition to the data necessary for subdividing the passenger-train expenses between Line-Haul, Station and Train-Terminal functions, elaborate statistical data must be provided for further subdividing the expenses under each of these functions between the eight passenger-train services contemplated. For dividing the passenger-train line-haul expenses between these several services, gross ton-miles or car-foot miles are suggested. For dividing the passenger-train station and train-terminal expenses, respectively, between these services, the car-foot space is suggested. Leaving out of consideration the complications involved in making a satisfactory division on an "allotted car space" basis of the used and unused passenger-train car space between the eight subdivisions of passenger-train service, suburban, coach, sleeping-parlor car, dining-buffet car, baggage, mail, express and milk it is obvious that the amount of detailed statistical data required for this purpose will be exceedingly large. In connection with the amount of detail here contemplated which is without parallel, it may be said that even in special cost studies involving separation of the passenger-train expenses between services extending over a limited time only, no such number of subdivisions of so many different services has ever been attempted.

Many things in the proposed plan are insufficiently explained. In this connection the question arises whether the segregation of all classes of expenses between functions and services is contemplated in a sufficiently careful manner to insure reasonably accurate results. Apparently the sponsors of the Plan so consider, but this is not conclusive. To make segregations of this character in the past even for a short period of time has generally required special observations and records of field operations as well as careful analysis of the related expenses in the office. It is difficult to clearly understand and visualize from the text of the plan and the appended chart of accounts the many detailed processes proposed for splitting up the expenses and the various means suggested for accomplishing this, but if the results of the proposed plan are to be reasonably accurate and reliable and serve any useful purpose, it would seem that they could hardly be developed through methods of procedure requiring any less amount of effort and degree of care than would be the substantial equivalent of a continuous cost study.

It is believed that the foregoing is sufficient to give some general idea of the exceedingly elaborate accounting procedure contemplated under the proposed plan and of the enormous cost that it will necessarily entail. While the purposes of the plan are manifold, that of finding unit service costs is the most ambitious and far reaching, and is chiefly responsible for the many detailed processes required and for the principal part of the cost. If only the other purposes of the plan were involved, and these were considered of enough importance to justify their accomplishment, it seems probable that this object could be attained sufficiently well at a great saving in cost by enlarging the present accounting procedure to a relatively small extent.

Confining attention to the cost finding aspect of the plan, there is much question as to its value for this purpose. This is occasioned by an insufficient explanation of the practical operation of the many intricate processes proposed and a lack of proper showing that they are such as to definitely accomplish the desired results with a reasonable degree of accuracy. Assuming that the plan will accomplish the segregation of freight and passenger expenses between line-haul, train-terminal and station functions with reasonable accuracy, average unit costs for these functions would then be available which would have a definite value in many computations where now in large part assumptions have to be substituted for facts owing to the lack of detail in the present accounts. Beyond this, it is a matter of uncertainty as to what functional unit costs would be found for individual or particular services, or could be derived from the numerous subdivisions of the service cost accounts, and with what degree of confidence they could be regarded as truly reflecting the approximate costs of such services. To anyone fairly conversant with such matters, there will be no question that to lay hold of, break apart, and sort out all of the expenses, both general and special, attributable to particular services, from those of other services with which they are involved as "an incident of regular accounting procedure," is an undertaking of magnitude and difficulty. Doubtless recognizing this fact the sponsors of the plan disclaim any purpose to include all kinds of traffic in the plan for finding unit service costs, and instead limited their selection of services "to be costed" to nine, one of which is the freight-train service as a whole, and eight are subdivisions of the passenger-train service. Had they selected an equal number of important commodities and made a satisfactory showing as to the manner in which the service cost of any one of them would be developed through the use of the service cost accounts and related

statistics, it would have been possible to more definitely appraise the practicability and value of the plan for cost finding purposes.

The report then concludes that, "without necessarily endorsing all that is said in the above extracts, which are not in all instances consecutive but taken from different parts of the report, and without undertaking to probe further into these matters, it is sufficiently clear that neither the alternative plan nor the Bitney plan is in shape for final adoption by the commission." The report continues in part:

A Committee Proposed

It is recommended, therefore, that the commission find that it is not justified on this record in prescribing a system of continuous routine cost accounting, with accompanying statistical requirements; but that it has been shown that there is clear warrant and need for further intensive research into this subject and that it should be carried on under the auspices of the commission. As an appropriate means of research, it is recommended that a special committee be selected by the commission composed of representatives of the railroads, the State commissions, the National Industrial Traffic League, the Taylor Society, and our own staff. So far as compensation for the services of these men on this committee may be necessary, provision can probably be made out of the commission's funds. Discussion of this matter on brief is invited, and also of the extent to which these organizations are willing to cooperate in such an inquiry. It might be desirable to have the men so selected relieved from other duties and made employees of the commission, so that the committee might have behind it all of our authority with respect to the procuring of information. This is a matter of detail which might also be discussed on brief. The instructions to the committee should be to conduct a thorough inquiry into the general subject of the best means of obtaining adequate information in regard to service costs, giving particular consideration to the practicability of a system of continuous routine cost accounting, and to report their conclusions, together with the reasons therefor, to the commission at as early a date as is consistent with adequate research.

Other Matters

If the above recommended finding in regard to the general subject of cost accounting should be adopted by the commission, it would follow that, until the report of the proposed special committee has been secured, as few changes as possible should be made in the existing classifications. There are, however, various changes which must be made in any event. For example, if the recommendations with respect to depreciation accounting in the proposed report in Nos. 14,700 and 15,100, issued contemporaneously herewith, are adopted, it will be necessary to revise the accounting classifications in conformity therewith. And even if these recommendations should not be adopted, there is clear need, as pointed out in that report, for bringing our accounting regulations into line with the requirements of our valuation work, so that the present necessity for duplication of work by the carriers and diverse reports upon the same subject-matter may be avoided. There are other changes in the classifications which experience has shown must be made. This report, however, for reasons which have already been indicated, will be confined to matters which were discussed of record at the public hearing.

Income Accounts.—Representatives of the Savings Bank Association of the State of New York brought to our attention a proposed revision of the law of that State with respect to the railroad bonds in which savings banks may invest. It is stated that the present statute is generally recognized as unscientific, and has the effect of keeping off the legal list many excellent bonds. A revision has been proposed which would make the test the earning by the railroad of its fixed charges at least one and one-half times for a period of years. To make this bill concise and definite, the Savings Bank Association wishes authoritative designations of

1. Railway operating revenues.
2. Income available for fixed charges.
3. Fixed charges.
4. Income after fixed charges, but before contingent bond interest.
5. Net income available for dividends and other corporate purposes.

The present form of income statement prescribed in our accounting classification does not in all cases group amounts under the above designations. It is urged that it could be reformed to accomplish the result desired, with public advantage and without prejudicing the rights and interests of the carriers or of investors. No one objected to the change suggested, and the reasons for it are persuasive. The commission should find that the income and deficit statement should be modified to read as shown in Appendix B hereto.

Appendix B

INCOME AND DEFICIT STATEMENT

RAILWAY OPERATING INCOME

Railway operating revenues	$.....	
Railway operating expenses	.....	
Net revenue from railway operations		$.....
Railway tax accruals		.....
Railway operating income		.....
Railway operating deficit		.....

RENTS RECEIVABLE

Hire of freight cars—Credit balance	.....	
Hire of locomotives—Credit balance	.....	
Hire of passenger-train cars—Credit balance	.....	
Hire of floating equipment—Credit balance	.....	
Hire of work equipment—Credit balance	.....	
Joint facility rent income	.....	
Total rent income		.....
Total railway operating income		.....
Total railway operating deficit		.....

RENTS PAYABLE

Hire of freight cars—Debit balance	.....	
Hire of locomotives—Debit balance	.....	
Hire of passenger-train cars—Debit balance	.....	
Hire of floating equipment—Debit balance	.....	
Hire of work equipment—Debit balance	.....	
Joint facility rents	.....	
Total rents payable		.....
Net railway operating income		.....
Net railway operating deficit		.....

OTHER INCOME

Income from lease of road	.....	
Income from nontransportation property	.....	
Separately operated properties—Income	.....	
Dividend income	.....	
Interest income	.....	
Income from sinking and other reserve funds	.....	
Release of premiums on funded debt	.....	
Deficits receivable from other companies	.....	
Miscellaneous income	.....	
Total other income		.....
Total other income		.....
Deficit after "other income"		.....

MISCELLANEOUS DEDUCTIONS FROM INCOME

Separately operated properties—Deficit	.....	
Income payable to other companies	.....	
Excess income payable to the Commission	.....	
Maintenance of investment organization	.....	
Miscellaneous tax accruals	.....	
Miscellaneous income charges	.....	
Total miscellaneous deductions		.....
Income available for fixed charges		.....
Deficit after miscellaneous deductions		.....

FIXED CHARGES

Rent for leased roads	.....	
Fixed interest on funded debt	.....	
Interest on unfunded debt	.....	
Amortization of discount on funded debt	.....	
Total fixed charges		.....
Income after fixed charges		.....
Deficit after fixed charges		.....

CONTINGENCIES

Contingent interest on funded debt		.....
Net income		.....
Net deficit		.....

DISPOSITION OF NET INCOME

Reservation for physical property investment	.....	
Reservations for retirement of debt	.....	
Miscellaneous reservations of income	.....	
Stock discount extinguished through income	.....	
Dividend appropriations of income	.....	
Capital stock distribution of income	.....	
Total appropriations of income		.....
Income transferred to profit and loss		.....
Deficit charged to profit and loss		.....

Materials and Supplies.—Edward Wray, publisher of "Railway Purchasing Stores," [sic.] appeared as a witness and contended that the present accounting classifications do not furnish sufficient information with respect to important ex-

penditures for materials and supplies. Their cost is now shown as one item in General Balance Sheet Account 716. "Materials and Supplies." He urges that our rules should provide for analysis of this account so that it will show the amounts represented by the several classes of materials. The carriers apparently do not classify their materials in a uniform way. It was the impression of the witness that about half of them use a classification recommended by the American Railway Association, but many classify in other ways. Analyses of the balance standing in account 716 would not be reliable or useful, in his opinion, unless prepared under a classification of materials prescribed by the commission. He urges that we prepare and issue such a classification.

There is much in favor of this proposal. Comparisons of the policies and methods followed by the various railroads with respect to materials and supplies can hardly be made to advantage without such analyses as are suggested, and they in turn can not be made with useful accuracy in the absence of a uniform classification of materials. There would seem to be no good reason why there should not be such a uniform classification, and it may be that the one now recommended by the American Railway Association and used by about half of the roads would serve the purpose sufficiently well.

However, the evidence of record upon this matter is rather fragmentary, and the subject needs further consideration. It is a matter which can be handled separately, apart from the general revision of the accounting classifications, and it seems that it should be so handled. As a preliminary to possible action, it would be appropriate and desirable for the Bureau of Accounts to address a questionnaire to the various carriers, in order to ascertain definitely their present practices with respect to materials and supplies, and to secure an expression of their views as to the desirability of a uniform classification of materials, such as has been proposed, and subaccounts under account 716 for the various classes.

This witness also urged the establishment of a separate primary account to include material store expenses, asserting as a reason that the present classification of operating expenses does not furnish sufficient information in regard to this large item of expense. It appears, however, that although under the present accounting system this expense is eventually distributed among the various primary accounts in which material is included, as a part of its cost, the total expense of this nature is aggregated in a clearing account. It would seem that this latter account serves, or can be made to serve, the purpose which the witness has in mind.

R. A. O. A. Recommendations

The report next considers various changes proposed by the Railway Accounting Officers Association with recommendations which may be summarized as follows:

1. That investment in carriers' transportation property be classified under only three accounts, i.e., "road", "equipment" and "investment suspense". *Disapproved.*

2. That the minimum capital expenditure which must be recorded in the investment account be increased from $100 to $200. *Disapproved.*

3. That cost of replacement in kind of property retired and replaced with property of like purpose be charged to operating expense. *Approved.*

4. That charges to investment for the cost of transportation in revenue trains be eliminated. *Disapproved.*

5. That separate accounts for original road, original equipment, road extensions, fixed improvements and additions and betterments be eliminated. *Approved.*

6. That mandatory requirements in the tentative revised classification for reporting plans of accruing revenues be eliminated. *Disapproved.*

7. That provisions of the present classification for reporting revenues derived from refrigeration and heating service be continued. *Disapproved.*

8. That separate primary accounts in operating expense be established for "work train service," "shop expenses", "material store expenses" and "stationery store expenses." *Disapproved*, but a clearing account for "work train service" is recommended.

9. That the primary accounts, "enginehouse expenses—yard" and "enginehouse expenses—train" be combined. *Recommended* that this question be referred to the proposed cost accounting committee.

10. That a new operating expense group, "miscellaneous", be set up to include valuation expenses, pension and relief expenses, casualties and material and stationery store expenses. *Disapproved.*

In conclusion the report says:

Other Suggestions

Testimony was offered by a number of witnesses to the effect that for cost finding or statistical purposes the joint facility accounts should be eliminated from the operating accounts. Because of the constantly increasing joint use of railway facilities there has been an increasing use of these accounts. They cover the compensation for maintaining and operating such joint facilities, upon many different bases. The operating accounts of many terminal companies operated for joint benefit are entirely or partly cleared to the tenant companies through these accounts. Settlements between carriers for pooled train services are adjusted through them. Were they eliminated and all debits and credits cleared through other primary accounts, it would result in the showing of a portion of the revenues and expenses of many joint operations in the accounts of one carrier, whereas the physical statistics of operations would be incorporated in the reports of another carrier. The elimination from operating expenses of joint facility credits for amounts received upon the basis of a rate per car, per train, or other flat rate basis, would logically require such receipts to be included in the revenues of the operating line, although recorded as expenses to the tenant line. The setting up of constructive revenues by one line through expenses to another line would be objectionable, and would result in duplication of revenues for the roads in the aggregate.

Joint Facility Accounts

Upon present evidence the commission should find that the joint facility accounts should be retained. However, this is a matter which may require further consideration in connection with the possible adoption of a cost accounting system.

In the text of the present road and equipment account 41, "Cost of Road Purchased," it is provided that the account shall include the cash cost of any road or portion thereof purchased. It is also provided that where the consideration given for the property is other than cash, "such consideration shall be valued on a current cash basis." This latter provision has proven very difficult of application, particularly in connection with reorganizations, where newly-issued securities of many kinds usually form the consideration for the property purchased. There was no adequate discussion of this matter at the public hearing. In view of its difficulty and importance, further discussion and suggestions in the briefs would be welcomed.

* * *

On the New Haven at Waterford, Conn.

The Lackawanna is the Pioneer in the Use of Medium Manganese Rail

Medium Manganese Steel Makes Higher Grade Rails

Revival of the use of a material that formerly gave excellent service, results in longer life and greater safety

By C. B. Bronson

Assistant Inspecting Engineer, New York Central Lines, New York City

DURING the decade now drawing to a close, a new type of steel rails has come into widespread use and, because of the generally superior results obtained from a track standpoint, as compared with standard open-hearth rails, under a diversity of conditions of grade, curvature, climate and traffic density, it has commanded considerable attention. Corresponding to the advantages it has demonstrated in service, it also possesses definite advantages in manufacture, including both the steel-making process and the rolling mill.

With the increased use of intermediate or medium manganese open-hearth steel rails, both terms being synonymous, railway officers have indicated a lively interest as to the merit and importance of this new material and the reasons for its superiority. In reality, however, the use of this grade of steel for rail manufacture is not altogether new, a large tonnage of medium manganese Bessemer steel rails having been rolled in the twenty years preceding the opening of the present century.

Long Life of the Old Scranton Rail

In the eighties and nineties, deposits of iron ore, mined near Lebanon and Cornwall, Pa., were used in the manufacture of rails by the Lackawanna Iron & Steel Co., Scranton, Pa., and the Bethlehem Steel Co. These ores were not only rich in iron, but were also high in manganese and copper. Rails rolled from Bessemer converter steel, which had been made from this ore, had a manganese content of 1 per cent and up to 1.5 per cent, with copper running about 0.5 per cent, and phosphorus 0.06 per cent or under.

The excellent qualities of these rails made quite an impression, particularly upon the rail users in the eastern territory. The late Dr. P. H. Dudley had recognized their value, and drew up specifications earlier than 1896, which virtually insured the use of these ores to make the iron and subsequently the steel for rails. The requirements and clauses as to chemistry in the specifications of 1896 are presented as a matter of record and interest:

	65 lb. Per cent	70 lb. Per cent	75 lb. Per cent	80 lb. Per cent	100 lb. Per cent
Carbon	0.45 to 0.55	0.47 to 0.57	0.50 to 0.60	0.55 to 0.60	0.65 to 0.70
Silicon	0.15 to 0.20	0.15 to 0.20	0.15 to 0.20	0.15 to 0.20	0.15 to 0.20
Manganese ..	1.05 to 1.25	1.05 to 1.25	1.10 to 1.30	1.10 to 1.30	1.20 to 1.40
Sulphur	0.069	0.069	0.069	0.069	0.069
Phosphorus ..	0.06	0.06	0.06	0.06	0.06

" * * * the inspector in charge has the right to select the minimum or maximum limit of either carbon, silicon, or manganese, or the three, as the general guide for the composition, as he may consider the finished product requires to produce a

tough rail with as dense fine grained heads as possible."

The following quotation from Dr. Dudley's report to the International Railway Congress in 1900, indicates that the function of the manganese in the rail steel was fully recognized at that time:

Manganese in combination with carbon adds considerable strength to the iron when present in quantities under two per cent. By some it is considered an impurity in steel, and so treated when under two per cent.

This is entirely fallacious and its teachings have been misleading. Manganese is absolutely essential in the manufacture of rails by the Bessemer process. When the manganese exceeds the percentage of carbon two or three times, it has a

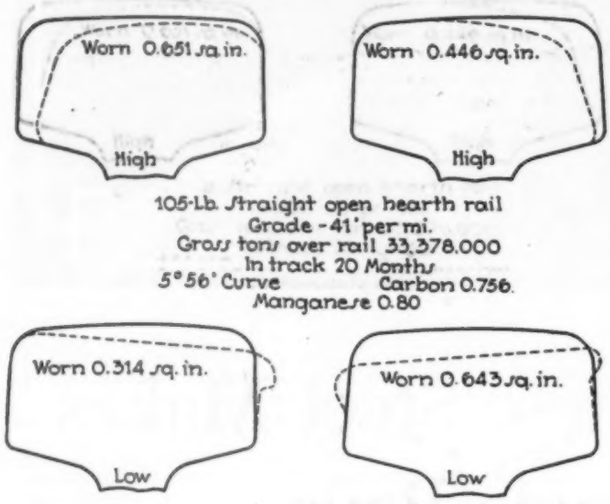


Diagram Showing Wear of Standard Open Hearth Rails on the Lackawanna

tendency to cause the latter to be more uniformly distributed through the iron. Manganese can be used in large percentages in connection with carbon without making the rails brittle, but on the other hand it assists to make a tough and tenacious metal. Manganese is necessary to take up oxides left in the bath after the metal is converted, a large percentage being absorbed and passed off with silicon in the form of slag.

Bessemer Rail Proves Unsatisfactory

Intermediate manganese steel rails were thus recognized more than thirty years ago, and their wonderful wearing qualities and low rate of failure were sources of constant comment. But Cornwall ores were practically exhausted by the beginning of the century, necessitating the use of Lake Superior ores with a higher residual phosphorus content in Bessemer steel rails, which increased rail failures decidedly. Because of the unsatisfactory character of Bessemer rails and the high rate of rail failures, consideration was soon given to basic open-hearth rail. Small tonnages had been installed by 1907, but the advent of such rail on a large scale was deferred for several years.

A crisis was reached in 1912 when an alarming increase in broken rails occurred in all parts of the country during the severe and protracted cold of that winter. Rail failures were correctly attributed to the inherent brittleness of high phosphorus Bessemer steel at low temperatures. Attention was again focussed on basic open-hearth steel and its production intensified so that by 1916 Bessemer steel had become a minor factor in railmaking. The early results with open-hearth steel were quite satisfactory, but closely following the start of the World War, a shortage of ferro-manganese arose, making it necessary to maintain the manganese content in rails near the lower limit of the specification.

G. J. Ray, chief engineer, of the Delaware, Lackawanna & Western, to whom credit is due for the introduction of the medium manganese steel for rails, became much concerned by 1918 with the rapid wear and crushing of rails, particularly of those rolled during the war. Studies were inaugurated to develop the properties of the old Scranton rails which were responsible for their remarkable service records. Rail section surveys showed a composition differing widely from currently accepted basic open-hearth rails, chiefly, however, in the higher manganese and copper contents.

Negotiations were opened later with one steel company to duplicate in open-hearth steel the physical and chemical characteristics of the Bessemer rails made at Scranton. Since it was considered doubtful whether copper could add much to the strength of the steel or its resistance to abrasion, it was not included in the requirements.

Heats were accepted at various times with the composition deviating considerably from the standard specifications, but no organized experiment on a large scale was attempted until 1920. The D. L. & W. then contracted for 2,000 tons, in which the composition specified was to include 0.6 carbon and 1.40 manganese. Mill test results were highly successful and satisfactory, but Mr. Ray preferred to wait until he was assured that this superiority was confirmed by service tests. By 1925, the evidence was considered quite conclusive, and since then all rail purchased by the D. L. & W., amounting to 90,000 tons, has been of medium manganese steel, in its 105 and 118-lb. sections and the 130-lb. R. E. section.

Other roads then entered the field, and the purchase of medium manganese rail by the New York Central

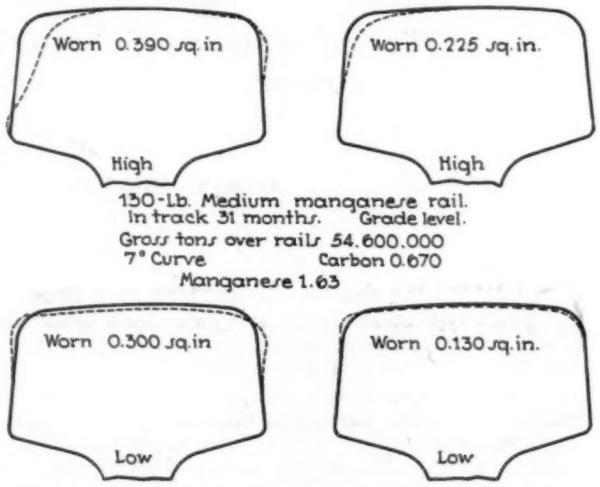


Diagram Showing Wear of Medium Manganese Steel Rails on the Lackawanna

began in 1925, and has increased in succeeding years as follows:

	Tons
1925	300
1926	9,000
1927	25,000
1928	48,950
1929	65,390

This entire tonnage was taken in the 105, 115 and 127-lb. Dudley section rails.

Certain western railroads have also used this rail extensively, chiefly the Chicago, Burlington & Quincy, which has purchased 100,000 tons, and the Atchison, Topeka & Santa Fe with a smaller but important tonnage. Several small trial installations have also been

made, some giving unsatisfactory results in service, where the experimental rolling was attempted over too wide a range in chemistry. In some of these cases the rails were either extremely hard or so soft that they crushed readily after a short period in service.

The ranges in carbon and manganese stipulated by the D. L. & W., have been followed by most of the railroads. Experience has shown that greater toughness and safety results with the carbon range 0.55 to 0.65, and manganese 1.30 to 1.50, but with reasonable variations above and below these limits for acceptance of occasional heats and to provide for differences in weight and section of rails. The specified ranges for the New York Central for all weights of rail have been carbon 0.54 to 0.67 and manganese 1.30 to 1.60.

Advantages in Manufacture

While interest has been directed primarily to the advantage of rails of various types or compositions from the track standpoint, the properties of the steel from a rolling viewpoint are closely interrelated to economy in service. Attention is called, therefore, to definite advantages gained at the time of steel-making and rail rolling which are reflected in the quality of the steel. These conclusions are based on a careful check of the 150,000 tons of medium manganese rails rolled for the New York Central during the past four years, and a like tonnage for several other roads. This is summarized briefly as follows:

1 The quiet setting of the steel in the molds indicates a more complete deoxidation.

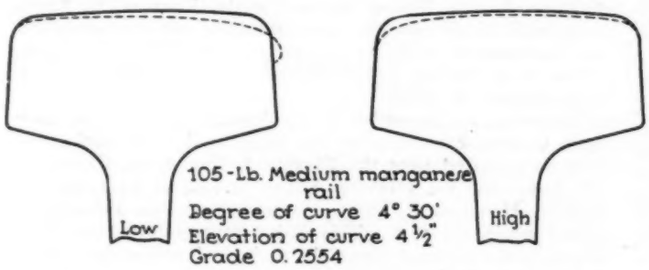
2 The freer flow of the steel in rolling is an advantage.

3 The percentage of second quality rails is lower, particularly at certain mills.

4 A finer grained structure is found in the fracture of drop test specimens and under the microscope.

5 A cleaner steel is obtained, and decidedly less segregation in "A" rails.

6 Increased toughness and shock resistance.



New York Central, Amount of Wear After Two Years' Service in a Heavy Freight Line

7 Higher elastic limit and tensile strength, from 10 to 25 per cent over standard open-hearth rail steel.

8 A higher endurance limit is found in fatigue tests of rotating beam members.

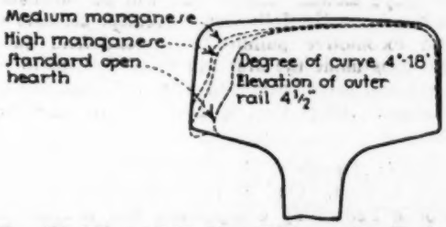
Piped rails occur somewhat more frequently than in standard open-hearth rails, but there is not a sufficient increase to cause concern. X-Rails were high in percentage for one road at one rail mill on the first rolling they received, while on subsequent rollings X-Rails have almost entirely disappeared, showing the possibilities of improvement.

No special or extra equipment is needed during steel making or rail rolling. Cases have arisen where an extra heat or two of medium manganese was needed to complete the order at the last minute, and a switch was made quickly, although the furnace was lined up to tap out a standard open-hearth melt. By providing suitable carbon and manganese ranges for the steel, and for the stamping of the rails with the letters IM or MM, no further revisions of present standard open-hearth rail specifications are necessary.

Advantages in Use

Railway officers are more directly concerned with the benefits to be derived from the use of intermediate manganese rails. Briefly, these are the slow rate of wear on curves, smaller percentage of failure, particularly from interior transverse fissures, and less flow of the metal, both laterally and lengthwise, especially at the rail ends, and less tendency to batter and chip.

Composite sections of rails from groups which were laid adjacent to each other at the same time, on the



Comparative Wear of Various Rails on the P. & L. E.

Pittsburgh & Lake Erie, on the high side of a curve in heavy traffic territory, in which the records of the different types of steel are directly comparable, are shown. These rails were standard openhearth "blue end" rails from the high side of the specified range; medium manganese, within the limits stipulated; and rails from a special heat, where the composition was purposely above the accepted maximum for experimental purposes. Contours of rails on the D. L. & W. are also shown, in which the rate of wear on the high side of the curves was also lower for the medium manganese.

The question of rail failures of course is paramount. With the exception of a few isolated cases, the record of transverse fissures is remarkably good. The percentage of this type of failure in medium manganese rails, is less proportionately, on either a tonnage or mileage basis, when compared to standard open-hearth and this despite the fact that the former are in tracks of fastest service and greatest traffic density.

Some horizontal crushed head failures have occurred, but the number is less than in standard open-hearth rails. Other types of defects in medium manganse rails have been negligible up to the present time. Rail failure records vary from the different mills, however, the product of some mills being almost immune from failures, even in high speed and heavy traffic service.

Intermediate or medium manganese steel is not considered as a cure-all for all service difficulties connected with rails. It is believed, however, by those who have assisted in the development and use of this material, that a progressive step on a large scale has been conducted successfully to obtain an average higher grade rail. Increasing the margin of safety, which results from its greater strength and soundness, should aid materially in meeting the service demands placed upon the rail steel by present day motive power and other equipment.

A MEETING OF SHIPPERS, railroad representatives, and the railroad committee of the city council of Minneapolis will be held on September 9 to discuss the feasibility of a central freight station in lieu of the several stations that now exist.

New Books

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Chicago—The History of Its Reputation, by Henry Justin Smith and Lloyd Lewis. Railroaders will be particularly interested in events on the following November 20, 1848 when a second-hand locomotive pulling ten second-hand cars over second-hand rails made the first trip from Chicago to the Des Plaines River and came back with wheat: "That day Chicago became Chicago!" 508 p. Pub. by Harcourt, Brace, New York City, $3.75.

The Economic Aspects of the St. Lawrence Waterway Plan, by Kathleen E. Best. One of the prize essays in the 1928-1929 Economic Fellowship Competition, and included in "Essays on Canadian Economic Problems Vol. II." 10 p. Pub. by Royal Bank of Canada, Montreal, Canada.

The O'Fallen Decision, by H. E. Hale. "Probably one of the most important features of the U. S. Supreme Court's O'Fallon decision of May 20, 1929 is that some of the questions at issue brought about by the Valuation Act of March 1, 1913 have at last been settled." 18 p. Pub. by Presidents Conference Committee Eastern Group, New York City. *Apply.*

Periodical Articles

America's Material For Leadership. Editorial comment. "Recovery of the carriers from the handicaps of war has been slow, but steady and sure. The railroads are performing their functions on a larger scale than ever, and with better satisfaction to the people whom they serve. Not only is able leadership essential to accomplish such wonderful results, but leadership backed by a battery of capable workers who in time will themselves be fitted to assume direction." Commercial & Financial Chronicle, August 17, 1929, p. 1026.

The Bearing of Myers v. United States upon the Independence of Federal Administrative Tribunals, by James Hart. "Among these [administrative tribunals] are the Civil Service Commission, the Interstate Commerce Commission, the Federal Reserve Board, the Federal Trade Commission, the United States Shipping Board, the United States Tariff Commission, the Federal Power Commission, the Inland Waterways Corporation, and the Federal Radio Commission." ftnte, p. 657. American Political Science Review, August 1929, p. 657-672.

Box Cars of the Sea, by Webb Waldron. "Ever since men first ventured upon the sea, they have been building freighters to *go and get* things they wanted. . . Of the 32,000 ships of the world, nine tenths are freighters. . ." p. 32. American Magazine, September 1929, p. 32-35, 150.

Motor-Carrier Regulation and Its Economic Bases, by G. Shorey Peterson. "Motor transportation not a typical regulated industry" p. 608-612. "Types of regulation" p. 613-615. "Motor-carrier regulation to protect rail carriers" p. 620-625. Quarterly Journal of Economics, August 1929, p. 604-647.

Old Age On the Balance Sheet, by M. B. Folson. Some pension problems on railroads and elsewhere. Atlantic Monthly, September 1929, p. 399-406.

Die "Valuation" der Eisenbahnen in den U. S. A. und der O'Fallon Case, by Dr. Steuernagel. Summary of questions involved. Archiv für Eisenbahnwesen, July-August 1929, p. 1052-1053.

Why the Train Stops Twenty Minutes at Boise, Idaho, by Mrs. E. J. Dockery. An illustrated article on the Howard Platt Gardens and the E. H. Harriman Memorial. Chimes at the Boise station. Sunset, August 1929, p. 23-24.

Looking Backward

Fifty Years Ago

The Chicago & Lake Huron, Western division, was sold in Detroit, Mich., on August 25 under foreclosure of mortgage and was purchased for the Grand Trunk [now part of the Canadian National] for $300,000. The sale includes the line between Lansing, Mich., and the Indiana state line, 100 miles.—*Railroad Gazette,* August 29, 1879.

A recent compilation of railway mileages shows that in addition to the Chicago, Milwaukee & St. Paul, which was mentioned recently, the seven longest railways in the United States are the Central Pacific, 2,372 miles; the Chicago & North Western, 2,254 miles; the Pennsylvania Railroad Company, 1,810; the Chicago, Burlington & Quincy, 1,670; the Chicago, Rock Island & Pacific, 1,231; the Lake Shore & Michigan Southern [now part of the New York Central], 1,177 miles; and the New York Central & Hudson River [now the New York Central], 1,108 miles. When several companies and the lines they own, lease, operate and control, are considered as one railroad, as the Pennsylvania Railroad Company, that system has a grand total of 6,865 miles of line.—*Railway Age,* August 28, 1879.

Twenty-Five Years Ago

The Pittsburgh, Shawmut & Northern recently made a test of Cohen's automatic train stop at St. Mary's, Pa. An engine was fitted up with a white and a red light, and a device for shutting the throttle valve and applying the brakes while a mile of the road north of the town was equipped with the third rail necessary for the operation of the stop.—*Railway Age,* September 2, 1904.

At Boston last week, the railroads secured from the Superior Court, an injunction against a half dozen ticket brokers restraining them from dealing in G. A. R. excursion tickets. In the United States Circuit Court at St. Louis, August 12, B. Wasserman was fined $500, and L. Aaron $250, for contempt of court in violating an injunction restraining them from dealing with non-transferable tickets.—*Railway Age,* August 26, 1904.

Beginning on September 4, the through trains of the Michigan Central between Detroit, Mich., and Cincinnati, Ohio, will be operated over the Cleveland, Cincinnati, Chicago & St. Louis and the Hocking Valley instead of over the Cincinnati, Hamilton & Dayton [now part of the Baltimore & Ohio] as in the past. This action represents a step in the New York Central System's policy of unification of its properties.—*Railway Age,* September 2, 1904.

Ten Years Ago

The Railroad Administration is not furnishing enough transportation to insure production and shipment of sufficient bituminous coal to meet the requirements of the nation this year, the traffic manager of the National Coal Association testified before the Senate committee investigating the coal situation. Car shortages caused the mines to fail to produce 51,900,000 tons of coal during the weeks ending August 2 and 9, he said.—*Railway Age,* August 29, 1919.

President Wilson has refused to grant the demand of the railway shop employees for a large advance in wages. He has given them a general increase of four cents an hour and to certain classes some larger increases. These increases are made, however, to remove inequalities deemed to exist in the present wage scales, and they do not give the shop employees more than about one-fourth of what they requested. On August 26 a committee of shopmen advised Director General Hines that the offer could not be accepted, and an order was issued for a new strike vote.—*Railway Age,* August 29, 1919.

Odds and Ends of Railroading

Stars and Bars

Captain C. A. DeSaussure, general agent for the Southern at Memphis, is one of the few Confederate veterans still in active railway service. The doughty captain, who is 83 years old, is adjutant general of the United Confederate Veterans.

The New Express Cars

By a peculiarity of lettering, the words on the new express cars might be mistaken for an ad for this publication. All that is necessary is to separate the letters a bit, as follows:

RAILWAY Express
AGE ncy, Inc.

Fathers and Sons in Cabs

Lon Chaney of the movies is the newest lay member of the Brotherhood of Locomotive Engineers. He recently played the part of an engineman in the picture "Thunder". Incidentally, in this picture his son is supposed to be his fireman. This department would welcome reports of instances where this is actually the case.

Rough on Cats

The story is told of a tom cat whose involuntary journey from Rawlings, Wyo., to Shreveport, La., was suddenly halted at Kansas City, Mo., by a telegram from Rawlings. The ticket agent at Kansas City received a telegram from J. G. Atwood, railroad man at Rawlings, to look into his wife's trunk, consigned to Shreveport, stating that he thought the family cat might be in it. The trunk was found and upon being unlocked, out jumped the cat. The small daughter of the family admitted she was responsible, saying that her mother didn't want her to take Tom, and that she thought that putting him in the trunk was the best way to get him to Shreveport.

Elephants

Through J. L. Vollintine, manager, Railway Underwriters, we learn that J. A. Wagner, general manager of the Des Moines Union, is another railroader who is fond of elephants. Mr. Wagner sends the following interesting description of his collection:

"My collection of elephants consists of ninety odd in numbers. It began through presentations made from time to time by friends wishing me good luck. Among those most notable are:

"A mother and babe, carved on a tusk, secured in France by a soldier friend who carried it in his pack through a portion of the War.

"A bronze secured by a soldier friend in the American Army in the occupied part of Germany.

"Thirteen ivory—12 of which were secured in Japan, one in China. The latter is an exact reproduction of the elephant statues along the road to the Ming Dynasty Burying Ground in China. This collection of 13 was sent to me by a missionary friend who was enroute to her station in Tibet.

"One is made from a cocoanut shell from Siam.

"One from Burma, made of teakwood.

"Three large elephants which a friend of mine says he found in 'the wilds of Broadway.' The notice of shipment of three elephants was read by one of my employees. He literally believed the information in the letter and for several days watched the arrival of passenger trains, expecting to see them alive and loaded in an express car. He wanted to assist in unloading them.

"Many others from various friends made up the collection and have their own individual history. One prized highly was presented to me by the railroad agents of Des Moines. Some came from anonymous donors.

"A recent addition is a bronze plaque made and copyrighted by Florence Sprague, sculptor at Drake University. This is a picture of Suzanne, belonging to the Hagenbeck-Wallace Circus herd, with all her trappings, including her keeper walking ahead with his hook erect, ready to participate in the opening spectacle of the above mentioned circus. A wonderful piece of art.

"The leader of the herd, in charging position, was a Christmas present from Karl K. Knecht, national secretary of the Circus Fans Association, and naturally his name is Karl."

How the Whistle Came Into Being

The locomotive whistle was invented back in 1833 after a farmer's cart load of choice eggs and butter had been knocked into a large omelet and splattered over a considerable part of the adjacent countryside, according to The Pennsylvania News. When country roads were all crossed at grade and when people used to sit on their doorsteps and watch the ox-carts go whizzing by, the locomotive engineer had no way to give warning of the engine's approach except by blowing a tin horn. Naturally, the engineers' lung capacity determined the volume of the sound in warning of oncoming trains. The story goes that, on one spring day in 1833, a farmer approached a railroad crossing on his journey to market with a load of eggs and butter. Just as he came upon the track a train approached. The engineer blew his horn, but the farmer was so deeply immersed in pounds and dozens, shillings and pence, that he did not hear it. The train struck the farmer's cart and in the twinkling of an eye the butter and eggs were transformed into an unsalable omelet widely spread over the right-of-way. A claim agent checked up the damage and as a result the railroad company paid the farmer the value of his butter, eggs, horse and wagon. Shortly afterward a director of the railroad company sought to ascertain if some invention could be had that would give a warning more likely to be heard than the horn then in use.

George Stephenson went to work and in a short time had a contrivance which, when attached to the locomotive boiler and the steam turned on, gave out a shrill, discordant sound. Today the locomotive whistle is still in use as a warning and should receive more attention by motorists and the public in general than is often the case.

Another Covered Bridge

The accompanying illustration shows another addition to our list of covered wooden bridges. This bridge is on the Chicago, Indianapolis & Louisville near Bloomfield, Ind., on the light traffic branch from Bedford to Switz City.

The Bridge at Bloomfield

NEWS of the WEEK

The Lehigh Valley's "Black Diamond" at Mountain Top, Pa.

THE ERIE has increased the wages of clerks by 2½ cents an hour, effective September 1. The advance, which benefits 4,587 clerks, increases the annual payroll approximately $300,000.

THE ST. LOUIS-SAN FRANCISCO has offered a reward of five thousand dollars for the arrest and conviction of the person or persons responsible for the wreck of a passenger train near Henryetta, Okla., on August 18, which resulted in the death of 13 persons. Eleven of the killed were passengers. The train in question was No. 118 and it was derailed at a switch which was found to have been tampered with.

Don't Burn Up Your Job

This is the title of a 16-inch poster in glaring colors which the Railway Fire Protection Association has prepared for the use of railroads in the fire prevention campaign next October. Copies of the poster may be had at cost from R. R. Hackett, secretary, Baltimore & Ohio Building, Baltimore, Md.

Equipment on Order

The railroads on August 1 had 36,335 freight cars on order, according to the Car Service Division of the American Railway Association. This was an increase of 21,631 cars above the number on order on August 1, 1928, and an increase of 16,991 cars above the same day two years ago. It also was 7,233 cars above August 1, 1926.

Locomotives on order on August 1 this year numbered 410 compared with 73 on the same day in 1928, and 209 on August 1, 1927. On August 1, 1926, the railroads had 517 on order.

Around the World in 22 Days

The airship Graf Zeppelin, flown by Dr. Hugo Eckener, which started from Lakehurst, N. J., on Wednesday, August 7, at 11:30 p. m. Eastern time, for a trip around the world, by way of Germany, Siberia and Japan, completed the trip on Thursday morning, August 29, reaching Lakehurst at 7:12 a. m. Across Siberia, the airship flew a considerable distance north of the Trans-Siberian Railroad, and the first point reached on the west coast of America was San Francisco. Thence the route was by way of Los Angeles, El Paso, Kansas City, and Chicago. Stops were made at Friedrichshafen, Tokio and Los Angeles.

National Safety Congress

The National Safety Council—W. H. Cameron, Chicago, managing director—announces that the eighteenth annual safety congress is to be held at Chicago on the five days beginning Monday, September 30. Meetings are to be held in the Stevens, the Blackstone and the Congress Hotels.

Eastern Association of Railroad Veterans

This is given as the title of an association which was organized at a meeting in New York City on Saturday, August 24, of veteran conductors and enginemen of the 11 principal railroads which have New York City terminals. George B. VanNortwick, of the Central of New Jersey, was elected president of the new organization and George E. V. Osborne, of the New York Central, secretary. Following the business meeting, those present were entertained by Ben E. Chapin, editor of The Railroad Employe.

Freight Cars in Need of Repair

Class I railroads on August 1 had 137,495 freight cars in need of repair or 6.2 per cent of the number on line, according to the Car Service Division of the American Railway Association. This was a reduction of 7,916 cars below July 15, at which time there were 145,411 or 6.5 per cent.

Freight cars in need of heavy repairs on August 1 totaled 98,295 or 4.4 per cent, a decrease of 2,059 compared with July 15, while freight cars in need of light repairs totaled 39,200 or 1.8 per cent, a decrease of 5,857 cars compared with July 15.

Third National Fuels Meeting

The third National Fuels Meeting, under the auspices of the Philadelphia Section of the Fuels Division, American Society of Mechanical Engineers, will be held at Philadelphia, Pa., October 7 to 10. The program is arranged for engineers interested in the production, use and conservation of fuels and will include papers on general subjects, such as economics of reclamation of anthracite culm, cleaning of anthracite, low temperature carbonization, etc., also papers on power plant, industrial and domestic operation, and smoke abatement.

Southern Pacific Lounge Cars to Shed Heat

The Southern Pacific is using aluminum paint and anti-actinic window glass in its new lounge cars as a means of protecting passengers from summer heat on cross-country trips. The aluminum paint is employed because of its heat-reflecting quality. It is expected to reduce materially the temperature of the car interior by keeping out from 20 per cent to 25 per cent of the sun's heat.

The special window glass, which "admits light but excludes heat," has not been used heretofore in the cars of any American railway but has been employed on trains in tropical India and Africa. This English-made glass, calorex, cuts off about 80 per cent of the heat from the sun's rays while transmitting about 65 per cent of the light. The lounge cars to which these features are being applied were ordered in February, and their construction is nearing completion.

St. Johnsbury & Lake Champlain

The St. Johnsbury & Lake Champlain and the Montpelier & Wells River, each less than 100 miles long, have complained to the Interstate Commerce Commission because they are paid for the transportation of United States mails as though they were operated as a single system; and they ask for the higher rate which, in accordance with the decision of the commission, is allowed to short line railroads. The commission has considered the application but has not made any decision; instead, it makes public the report of Frank E. Mullen, attorney-examiner, who recommends that the commission find that the roads are not separately operated, and, therefore, cannot have the higher rate of pay. Both roads were formerly in the hands of the Boston & Maine, and the Montpelier still is owned substantially by the B. & M.

The companies claim that they are separate and distinct and they make separate

reports to the commission. The president, the treasurer and the superintendent of each road is a different man from the one holding the same position in the other road, but the position of general freight and passenger agent, chief engineer and mechanical superintendent are each filled by the same man on both roads.

The examiner's report is based on an opinion of the commission in the case of the Winston-Salem Southbound, wherein it was found that that road and the Atlantic Coast Line should be treated as substantially one company, so far as mail pay was concerned.

Program for the Annual Convention of the Tool Foremen's Association

The sessions of the annual convention of the American Railway Tool Foremen's Association will be held at the Hotel Sherman, Chicago, September 11-13, inclusive. The program for this convention is as follows:

Wednesday, September 11, 1929
First Session—9:30 a.m.
Opening address: M. D. Chase, shop superintendent, Missouri-Kansas-Texas
Response: H. L. Taylor, supervisor shop machine tools, Baltimore & Ohio
President's address: W. R. Millican, Missouri-Kansas-Texas
Report of secretary-treasurer: G. G. Macina, Chicago, Milwaukee, St. Paul & Pacific
Appointment of committees
Adjournment
Second Session—2:00 p.m.
Address: E. B. Hall, general superintendent of motive power and machinery, Chicago & North Western
Response: E. J. McKernan, supervisor of tools, Atchison, Topeka & Santa Fe
Report of Standing Committees on Standardization of Boiler Tools, A. A. Ferguson, chairman
Adjournment
Thursday, September 12, 1929
Third Session—9:30 a.m.
Address: C. M. House, superintendent of motive power and equipment, Chicago & Alton
Response: C. A. Shaffer, general supervisor of machinery and tools, Illinois Central
Report of Standing Committee on Methods and Tools for Repairs to Air Brake Equipment and Reclamation of Various Material, C. C. Kuyper, chairman
Address: "Importance of Properly-Designed Milling Cutters and Machine Tool Equipment," A. N. Goddard, Goddard & Goddard Co., Inc.
Report of Standing Committee on Jigs and Devices for the Locomotive Shop, L. R. Denst, chairman
Election of officers
Adjournment
Special visit to exhibits
Friday, September 13, 1929
Fourth Session—9:30 a.m.
Report of Standing Committee on Tools and Equipment for Car Repair Shop and Yard, E. S. Behen, chairman
Report of Standardization Committee, E. J. McKernan, chairman
Reports of committees
Unfinished business
New business
Selection of place for annual convention
Convention adjournment

Railroad Athletic Meets Held on August 24

Among the several railroad athletic meets which occurred on August 24 were those of the Chicago, Rock Island & Pacific, the Pennsylvania and the Pere Marquette. The sixth annual athletic tournament of the Rock Island, which was held at Topeka, Kan., included 15 track and field events, in addition to contests in trap shooting, pistol shooting, horseshoe pitching, checkers, tennis and golf. The golf tournament was won by Fritz Creider, a pipe fitter from Horton, Kan., with a score of 155 for 36 holes; the trap shooting contest was won by a fireman who broke 98 "pigeons" out of 100; while a watchman from Shawnee, Okla., was the champion pistol shooter, having accomplished a score of 489 hits out of 500 shots. The Hayden trophy, which is awarded by C. Hayden, chairman of the board, to the district acquiring the largest number of points in the tournament, was won by the first district. The Gorman trophy, which J. E. Gorman gives to the division winning the most points, was taken by the Kansas division. John Warrington, a call boy from Estherville, Iowa, repeated his last year's performance by again winning the Brown trophy which E. M. Brown, chairman of the executive committee, awards for the highest individual score.

The Pennsylvania's western region meet was held at Indianapolis, Ind., and was participated in by 300 athletes. Baseball, track and field events, quoits, horseshoes and rifle shooting contests were held at the Pennsylvania athletic field, while tennis, trapshooting, golf and swimming were staged in other parts of the city.

The Pere Marquette field day took place at Siginaw, Mich. In addition to the field meet, there was a program of addresses, the speakers being F. H. Alfred, vice-president of that railroad, Mayor A. Tausand of Saginaw. M. E. Hepburn, member of parliament, Elgin, Ont., Wilbur M. Brueker, attorney general of Michigan and B. J. Vincent, congressional representative of the eighth Michigan district.

Thirty-One Railroad Men At Harvard Session

Thirty-one representatives of nine American, one European and one Latin American railway completed the transportation courses conducted by the Harvard Graduate School of Business Administration in connection with its 1929 summer session for business executives. The transportation group included 32 students, one of whom was an industrial traffic man. As at the initial 1928 session these railroad courses were conducted by William J. Cunningham, James J. Hill Professor of Transportation at Harvard University, and Winthrop M. Daniels, Thomas DeWitt Cuyler, Professor of Transportation at Yale University. The scope of the 1928 session was outlined in an article which appeared in the *Railway Age* of August 25, 1928, page 355, while a detailed outline of the 1929 course was published in the *Railway Age* of May 18, page 1174.

The foreign railway men attending the session were Wilfred J. Brown, assistant to the president of the Consolidated of Cuba, and Horace G. King, stores department clerk of the Great Western of Great Britain. The Boston & Maine had the largest representation with seven of its employees enrolled. Next came the New Haven, the Chesapeake & Ohio and the Baltimore & Ohio, with four each. The New York Central and the Northern Pacific each had three representatives, while the Chicago, Burlington & Quincy had two and the Boston & Albany and Canadian Pacific one each. The list of students follows:

SUMMER SCHOOL TRANSPORTATION CLASS 1929

Abriel, Walter G., New York Central, Chief Clerk to V. Pres.
Brackett, John W., Boston & Maine, Trainmaster.
Brown, Wilfred J., Consolidated of Cuba, Assistant to Pres.
Cary, James R., Jr., Chesapeake & Ohio, Trainmaster.
Chamberlin, Chapman H., Boston & Maine, Statistician.
Clarke, Joseph G., Boston & Maine, Trainmaster.
Coolidge, John, N. Y., N. H. & H., Clerk.
Dorain, Hugh A., N. Y., N. H. & H., Cost Engineer.
Eble, Harold J., Chicago, Burlington & Quincy, Trainmaster.
Evans, Wallace G., New York Central, City Freight Agent.
Glenn, Ernest D., Chesapeake & Ohio, Assistant Supt. Glifton Forge Division.
Gordon, William A., N. Y., N. H. & H., Special Assistant to Comptroller.
Gosnell, Charles M., Baltimore & Ohio, Division Freight Agent.
Gregory, Charles G., Northern Pacific, Assistant Statistician.
Ingalls, George H., New York Central, Traffic Representative.
Kiley, John J., Boston & Maine. Office Assistant.
King, Horace G., Great Western (Great Britain), Clerk in Stores Dept.
Kingston, William E., Canadian Pacific, Superintendent.
Maloy, Austin W., Boston & Maine, Trainmaster.
Mangen, John J., N. Y., N. H. & H., Rate Clerk.
North, John C., Baltimore & Ohio, Chief Clerk to Auditor.
Parant, Joseph A., Boston & Maine, Principal Assistant Eng.
Perkins, Herbert M., Northern Pacific, Assistant Engineer.

The Transportation Group at the 1929 Harvard Summer Session For Business Executives

Perry, Walker S., Chesapeake & Ohio, Assistant Trainmaster.
Pitt, William R., Baltimore & Ohio, Special Accountant.
Pringle, Ward S., Chicago, Burlington & Quincy, Assistant Auditor of Expenditures.
Pulliam, Samuel H., Chesapeake & Ohio, Trainmaster.
Slade, George N., Northern Pacific, Trainmaster.
Shriver, C. M., Baltimore & Ohio, Superintendent.
Tobin, John J., Boston & Maine, Fuel Supervisor.
Wheat, Walter L., Boston & Albany, Assistant Chief Clerk to General Freight Agent.
Williams, Harry N., Jewel Tea Company, Traffic Manager.

New Haven Shows Relationship Between Earnings and Service

"The direct relationship between railroad rates and railroad service was never more clearly shown," says a statement issued by the New Haven Railroad following a meeting of the directors in New York yesterday, "than in the decision of the company to spend for improvements, approximately $5,000,000.00, received in increased revenue (after taxes) from the New York commutation rates, settlement of the company's claim as to the so-called Canadian "loop" traffic, and the back mail pay award. This is part of a special $11,000,000.00 improvement program. The money derived from passenger traffic will be spent to furnish more comfortable passenger service, and the money derived from freight traffic to provide more efficient freight service.

"This program will substantially increase the number and improve the char-

Operating Revenues and Operating Expenses of Class I Steam Railways in the United States

Compiled from the Monthly Reports of Revenues and Expenses for 181 Steam Railways, Including 16 Switching and Terminal Companies.

FOR THE MONTH OF JUNE, 1929 AND 1928

Item	United States		Eastern District		Southern District		Western District	
	1929	1928	1929	1928	1929	1928	1929	1928
Average number of miles operated	241,386.02	241,03[illegible]05	59.885.56	59,937.18	45,793.14	45,778.97	135,707.32	135,317.90
Revenues:								
Freight	$390,360,333	$370,814,097	$174,194,814	$164,149,393	$67,711,245	$65,480,706	$148,454,274	$141,183,998
Passenger	*b*79,328,795	*c*81,824,258	41,943,025	42,545,405	9,604,626	10,597,703	27,781,144	28,681,150
Mail	*e*19,146,291	7,962,274	6,488,719	2,984,058	3,940,666	1,366,100	8,716,906	3,612,116
Express	11,511,719	12,584,170	4,828,679	5,991,663	1,700,873	1,613,608	4,982,167	4,978,899
All other transportat'n	18,356,268	17,793,449	10,973,258	10,286,489	1,175,922	1,147,215	6,207,088	6,359,745
Incidental	12,310,263	11,464,718	6,090,946	5,597,770	.,201,207	1,266,844	5,018,110	4,600,104
Joint facility—Cr.	1,093,018	1,117,886	371,956	420,230	160,525	160,764	560,537	536,892
Joint facility—Dr.	358,551	403,913	75,714	136,489	33,157	37,215	249,680	230,209
Railway operating revenues	531,748,136	503,156,939	244,815,683	231,838,519	85,461,907	81,595,725	201,470,546	189,722,695
Expenses:								
Maintenance of way and structures	79,459,342	79,540,309	32,600,218	32,237,214	12,611,261	12,702,544	34,247,863	34,600,551
Maintenance of equipment	100,580,663	97,337,240	47,907,703	45,527,284	18,016,283	17,750,656	34,656,677	34,059,300
Traffic	11,225,157	11,129,105	4,373,611	4,072,536	1,987,464	2,032,471	5,165,082	5,024,098
Transportation	169,374,025	168,053,108	81,057,384	79,043,228	26,106,613	26,722,621	62,210,028	62,287,259
Miscellaneous operat'ns	5,229,681	4,865,481	2,291,570	2,222,957	465,273	502,436	2,472,838	2,140,088
General	16,5[illegible]9,679	16,102,856	7,402,477	7,283,916	2,731,577	2,704,535	6,445,625	6,114,405
Transportation for investment—Cr.	1,153,132	1,457,176	306,475	213,182	*d1,084*	94,342	847,741	1,149,652
Railway operating expenses	381,596,415	375,570,923	175,326,488	170,173,953	61.919,555	62,320,921	144,350,372	143,076,049
Net revenue from railway operations	150.151,721	127,586,016	69,489,195	61,664,566	23.542.352	19,274,804	57,120,174	46,646,646
Railway tax accruals	34,117.951	31,680,564	14,498.450	14,019.200	5,999,899	5,482,616	13,619,602	12,178,748
Uncollectible ry. revs.	85,643	131,444	27,480	84,562	25.521	14,619	32,642	32,263
Railway operating income	115,948,127	95,774,008	54.963.265	47,560,804	17,516.932	13,777,569	43,467,930	34,435,635
Equipment rents—Dr. balance	7,781,004	7,677,606	4,521,437	4.260,994	*d427,047*	*d185,360*	3,686,614	3,601,972
Joint facility rent—Dr. balance	2,205.808	2,104,361	1,057,257	991.507	259,138	276,991	889,413	835,863
Net railway operating income	105,961,315	85,992,041	49.384,571	42,308,303	17,684,841	13,685,938	38,891,903	29,997,800
Ratio of expenses to revenues (per cent)	71.76	74.64	71.62	73.40	72.45	76.38	71.63	75.41

FOR SIX MONTHS ENDED WITH JUNE, 1929 AND 1928

Average number of miles operated	241,343.01	240,628.11	59,908.19	59,913.67	45,811.16	45,671.02	135,623.66	135,043 42
Revenues:								
Freight	$2,319,017,326	$2,192,109,510	$1,028,988,471	$959,464,414	$423,955,001	$407,848,027	$866,073,854	$824,797,069
Passenger	*f*430,982,870	*g*442,272,180	225,254,799	228,809,930	63,804,251	68,593,826	141,923,820	144,868,424
Mail	*h*69,770,423	47,486,780	26,176,062	17,922,778	11,969,715	8,359,273	31,624,646	21,204,729
Express	71,821,702	67,148,784	32,682,544	30,741,163	12,001,545	10,886,963	27,137,613	25,520,658
All other transportat'n	103,882,057	100,249,013	59,689,522	56,484,717	7,466,605	7,251,489	36,725,930	36,512,807
Incidental	63,372,898	57,733,723	32,619,464	29,189,796	8,489,962	8,683,874	22,263,472	19,860,053
Joint facility—Cr.	6,260,637	6,645,373	2,110,854	2,586,341	943,757	922,018	3,206,026	3,137,014
Joint facility—Dr.	1,968,804	2,242,760	486,988	790,767	205,863	214,016	1,275,953	1,237,977
Railway operating revenues	3,063,139,109	2,911,402,603	1,407,034,728	1,324,408,372	528,424,973	512,331,454	1,127,679,408	1,074,662,777
Expenses:								
Maintenance of way and structures	413,346,026	409,252,194	169,532,952	167,004,481	75,364,523	73,174,773	168,448,551	169,072,940
Maintenance of equipment	602,813,030	586,697,813	287,857,285	273,699,552	104,786,014	105,875,810	210,169,731	207,122,451
Traffic	64,564,552	62,784,134	24,223,108	23,257,076	12,024,310	12,208,795	28,317,134	27,318,263
Transportation	1,044,982,957	1,032,842,299	495,083,539	486,373,931	167,389,339	170,096,596	382,510,079	376,371,772
Miscellaneous operat'ns	28,697,491	27,362,773	13,210,879	12,893,110	3,564,660	3,784,549	11,921,952	10,685,114
General	97,088,114	97,158,830	42,280,262	43,468,142	16,346,383	16,240,653	38,461,469	37,450,035
Transportation for investment—Cr.	5,677,371	7,310,950	1,247,395	1,095,708	406,880	690,244	4,023,096	5,524,998
Railway operating expenses	2,245,814,799	2,208,787,093	1,030,940,630	1,005,600,584	379,068,349	380,690,932	835,805,820	822,495,577
Net revenue from railway operations	817,324,310	702,615,510	376,094,098	318,807,788	149,356,624	131,640,522	291,873,588	252,167,200
Railway tax accruals	195,877,963	182,705,783	81,553,214	76,037,690	36,656,875	34,868,267	77,667,874	71,799,826
Uncollectible ry. revs.	579,577	683,169	227,725	351,065	128,174	112,375	223,678	219,729
Railway operating income	620,866,770	519,226,558	294,313,159	242,419,033	112,571,575	96,659,880	213,982,036	180,147,645
Equipment rents—Dr. balance	45,257,362	44,862,980	24,935,818	24,537,562	858,567	1,000,139	19,462,977	19,325,279
Joint facility rent—Dr. balance	12,247,044	12,136,051	6,007,321	6,208,442	1,169,079	1,060,814	5,070,644	4,866,795
Net railway operating income	563,362,364	462,227,527	263,370,020	211,673,029	110,543,929	94,598,927	189,448,415	155,955,571
Ratio of expenses to revenues (per cent)	73.32	75.87	73.27	75.93	71.75	74.31	74.12	76.54

b Includes $3,692,466 sleeping and parlor car surcharge. *c* Includes $3,515,752 sleeping and parlor car surcharge. *d* Deficit or other reverse items. *e* Includes approximately $9,623,587 back railway mail pay. *f* Includes $20,018,596 sleeping and parlor car surcharge. *g* Includes $19,429,923 sleeping and parlor car surcharge. *h* Includes approximately $13,830,983 back railway mail pay.

Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revision.

acter of the company's passenger equipment; will expand its freight facilities and speed up freight movement, will modernize the South and Back Bay stations at Boston and increase earning capacity."

The New Haven has already stated that the $1,436,000.00, after taxes, accumulated during the three years and three months which elapsed between the decision of the New York Public Service Commission increasing commutation rates, and the final decision, is to be applied on a 25 per cent cash payment, amounting to $1,625,000, towards the purchase of the most modern type of equipment for passenger service, the total cost of which will be some $6,500,000. Of the 132 cars already ordered, 111 will be built in New England, by the Osgood Bradley Company of Worcester, Mass.

The New Haven now announces an enlarged program which includes the following improvements:

(a) Four all-steel diners (in addition to six included in the previous order).

(b) Laying of an additional 20,000 tons of 130-lb. rail this year.

(c) Stone ballasting 40 miles of line.

(d) Elimination of reverse curve at Sachems Head.

(e) Improvement of South Station, Boston.

(f) Improvement of New Haven passenger station.

(g) Increase in freight car rebuilding program.

The recent settlement by the company with its connections west of the Hudson River of its claim that divisions on traffic moving over American roads through Canada should be the same as divisions upon similar traffic moving entirely within the United States, resulted in increased divisions covering several years past, after taxes, of $1,355,000, which is being included in income during the last eight months of 1929.

This added freight revenue is being applied, with some additional earnings, to the installation of car retarders in the gravity yards at Cedar Hill, and Providence, and will materially speed up the handling of cars through these yards and thus improve the freight service.

The New Haven's back mail pay was received on July 1, amounting, after all taxes, to $2,076,000.00. Of this sum, about $1,700,000.00 will be used to pay for the New Haven's proportion of substituting butterfly awnings for the present train shed at South Station, Boston, the enclosing of the concourse, the general modernizing of the entire facility; also in payment of the rebuilding and improving of Back Bay station, and to added special rail and added maintenance program.

Summarizing, the New Haven's 1929 gross revenue will be increased approximately $1,580,000.00 from freight divisions on "loop" traffic, and $2,401,000.00 from back mail pay, expected to be included in income in the last two or three months of the year, or a total of $3,981,000.00, but the extraordinary expenditures outlined above chargeable to the income account, and added taxes on account of this increased revenue, will largely affect the added revenues, so that 1929 net income is expected to be substantially the same as though neither the unusual revenues nor the special expenses had been included in the income accounts.

Master Blacksmiths' Supplymens' Association Exhibit at Detroit

In connection with the thirty-third annual convention of the International Railroad Master Blacksmiths' Association held at Fort Shelby Hotel, Detroit, Mich., August 20 to 22 inclusive, fourteen Railway Supply companies had exhibits and representatives in attendance. At the annual meeting of the Supplymens' Association, which was held on the last day of the convention, the following officers were elected for the ensuing year: President, E. T. Jackman, Firth-Sterling Steel Company; vice-president and chairman of the entertainment committee, C. A. Champieux, Oxweld Railroad Service Company; secretary, J. H. Jones, Crucible Steel Company of America.

The following is a list of the different companies exhibiting, the products exhibited and the representatives in attendance:

Acme Machinery Company, Cleveland, Ohio—Literature on forging machines. Represented by H. A. Anderson.

Anti-Borax Compound Company, Fort Wayne, Ind.—Samples of welding and brazing fluxes. Represented by C. O. Kahre.

Ajax Manufacturing Company, Euclid, Ohio—Samples of forging work and literature. Represented by C. E. Wicks, A. L. Guilford, G. F. Fristoe and J. R. Blakeslee.

Crucible Steel Company of America, Pittsburgh, Pa.—Literature on special tool steels. Represented by F. Baskerfield, J. H. Jones, A. E. Jones and W. M. Stevenson.

Ewald Iron Company, Louisville, Ky.—Literature on staybolt and engine bolt iron and wrought iron billets. Represented by W. R. Walsh.

Firth Sterling Steel Company, McKeesport, Pa.—Literature on Circle C and other steels. Represented by E. T. Jackman.

Heppenstall Knife & Forge Company, Pittsburgh, Pa.—Literature on open hearth steel billets. Represented by D. A. Stuart.

E. F. Houghton Company, Philadelphia, Pa.—Literature on quenching oils, etc.

Johnston Manufacturing Company, Minneapolis, Minn.—Blacksmith oil-fired forge-reverse blast furnace burners. Represented by Harry Burrhus, H. A. Anderson, J. R. Mathews and E. F. McGrath.

Oxweld Railroad Service Company, New York and Chicago—Oxy-acetylene welding and cutting equipment. Represented by A. N. Lucas, W. Jones, E. B. Daly, A. W. Miller, J. A. Kelly, C. A. Champieux and J. G. Tawse.

Railway Journal, Chicago—Publications. Represented by E. C. Cook.

Railway Mechanical Engineer, New York—Represented by H. C. Wilcox.

Jos. T. Ryerson & Sons Company—Literature and samples of wrought iron billets. Represented by I. B. Yates and V. C. Cartus.

Union Mining Company, Mt. Savage, Md.—Samples of firebrick and literature. Represented by C. H. Claiborne.

Foreign Railways

Great Western to Issue Engraved Tickets

The Great Western of Great Britain is introducing a new form of season ticket on the system which will be produced by steel plate engraving rather than the regular method of printing. The object in this change is to make the process of forgery of the tickets more difficult, and at the same time to produce a ticket of artistic merit. A feature of the design will be the delicacy of the engraving in the crest of the company, which appears beneath the title. No change will be made in the size of the ticket.

British Railway Workers Would End Wage Agreement

The three unions of British railway workers have tendered to the railway companies three months' notice to terminate the 12-month wage reduction agreement made in August, 1928, according to a recent item in the Times (London). The wage reductions under the agreement amounted to 2½ per cent and affected all railway employees and officers. The plan was adopted as an aid to the rehabilitation of the railways.

In connection with the notice of termination it is pointed out that the unions will perhaps not desire to hurry the negotiations which will become necessary if the companies ask for a continuance of the assistance given them through the wage reduction. Indications are that the workers would first like to know what will be the financial value to the railways of any assistance resulting from recent proposals made by the government.

Veteran German Railway Editor

Dr. Alfred von der Leyen, editor of Archiv für Eisenbahnwesen, celebrated on June 28, last, at his home in Berlin, his eighty-fifth birthday.

For more than 53 years, Dr. von der Leyen was one of the leading figures in developing the railroad system of Germany and he is active today as editor of the Archiv, which is a publication issued under official auspices. He has made thorough studies of the railroads of North America, and two of his main works deal with the economic and political relations and the financial and traffic policies of the railroads of this continent. He began giving lectures in the University of Berlin in 1892, and he is still lecturing regularly.

Dr. Alfred von der Leyen

Traffic

The Southern Pacific's new line between Alturas, Cal. and Klamath Falls, Oregon, will be officially opened on September 1.

The Canadian Pacific announces that plans are being made for shortening the time of its through train from Montreal to Vancouver, now making the trip in 108 hours, to about 98 hours.

The Interstate Commerce Commission has suspended until March 25, 1930, changes proposed by the Louisiana & Arkansas in switching charges at New Orleans, the tariff affected being I. C. C. No. A 944.

Bituminous coal dumped into vessels at Lake Erie ports this year—January 1, to August 11,—has totaled 21,128,196 tons, the heaviest movement for several years. This quantity is 3,737,104 tons more than the total for the corresponding period last year.

The Interstate Commerce Commission has suspended until March 27, 1930, certain proposed freight rates on sugar between Mobile, New Orleans, and other Mississippi River crossings on the one hand, and southern territory on the other, over barge and rail lines. The proposed tariffs would produce numerous increases and reductions.

The Interstate Commerce Commission has suspended until March 25, 1930, increases proposed by E. B. Boyd, agent, in rates on silica sand from points in Illinois to destinations in Ohio, and until August 30, 1929, on shipments to points in Indiana. Examples of the proposed increases are from Ottawa, Ill., to Decatur, Ind., from $2.10 per ton to $2.65; and to Marion, Ohio, from $2.10 to $2.90. A hearing is appointed to be held at Chicago, on September 25.

The Arkansas Railroad Commission will hold a hearing on September 19 to decide whether Arkansas railroads shall be permitted to put into effect restricted routing schedules announced by the roads several months ago. The commission suspended the new schedules on the protest of shippers, pending a hearing. Under present schedules a shipment of goods may be sent over several different railroads, although the road first receiving it may have a line passing through the point of destination. The proposed schedule would require that shipments go all the way over one road, when that road serves the point of origin and the point of destination, regardless of the distance involved.

In three days of this week, Wednesday, Thursday and Friday, the Boston & Maine found it necessary to use nearly 400 extra cars—Pullman cars and coaches—to move the 20,000 boys and girls from northern New England camps, who, within that time, started for their homes in southern New England and in southern and western states; and at the end of this three-day period, preparations were made for an even greater movement of families and others who make Labor Day the end of their vacation season. The Traffic Department of the Boston & Maine estimates that the boys' and girls' camps in northern New England have this year entertained 50,000 youngsters, not all of them, however, traveling by railroad.

The Interstate Commerce Commission has suspended until March 24, 1930, the operation of certain changes proposed by the Chicago & North Western and other roads in westbound freight rates from Chicago, Milwaukee and St. Louis to Missouri River crossings. It is proposed for example to advance the rates from Chicago to Sioux City, Iowa, from $1.20 to $1.31, first class, and from 42 cents to 47½ cents, fifth class; to Canton, S. D., $1.26½ to $1.31, first class and from 43 cents to 47½ cents, fifth class.

Passenger Officers Post-Convention Tour

A special train for the Winnipeg convention of the American Association of Passenger Traffic Officers (September 16-17) will leave Chicago via the Chicago & North Wetsern at 5 p. m. on September 14. Following the adjournment of the convention those attending will be taken on a tour through Saskatoon and Edmonton to Jasper Park, thence to Banff and Lake Louise, Calgary, Regina, returning via Minneapous to Chicago, which will be reached on September 28.

Grain Embargo Effective

The embargo which northwestern carriers placed on shipments of barley, oats and rye destined to Minneapolis, Minn., St. Paul, Duluth and Superior, Wis., on August 21, was so effective that improved conditions warranted a modification on the fourth day. On August 22, receipts began to fall off and stored supplies began moving for export. On August 23 the embargo on barley was modified to allow the acceptance of these shipments on August 26.

Proposed Report on Iron Pipe Complaint

The Interstate Commerce Commission has made public a proposed report by R. G. Taylor, examiner, on complaints filed in February, 1926, and subsequently, alleging unlawful factors in freight rates on wrought iron pipe from certain eastern points to destinations in Arkansas and Louisiana. The examiner recommends that, on that part of the rates east of St. Louis and other southwestern gateways, the report shall say that nothing unreasonable has been found, but west of these gateways, in certain instances, rates are found unreasonable and reparation should be awarded. This proposed report is on the complaint of the Standard Pipe Line Company versus Texas & Pacific and others, but embraces also several other complaints.

Proposed Report on Oil-Well Supplies

The Interstate Commerce Commission has made public a proposed report by R. G. Taylor, examiner, on the complaint of the Parkersburg Rig and Reel Company, against the Chicago, Rock Island & Pacific, et al. alleging unlawful rates on oil-well supplies and rig iron from Parkersburg, W. Va., to southwestern destinations. The examiner recommends a finding that the factors of the rates east of St. Louis and other gateways are found not unreasonable but factors in the rates beyond the gateways are found unreasonable in certain instances; and that reparation be awarded. Rates are prescribed for the future to destinations in Kansas. This report covers also several other reports on cases from the same complainant against other roads.

Proposed Report on Iron and Steel Tanks

The Interstate Commerce Commission has made public a proposed report by R. G. Taylor, examiner, on rates complained of by the United Iron Works, covering the movement of iron and steel tanks and certain iron and steel articles from eastern territory to the southwest. The examiner finds that the rates east of the Mississippi River gateways are not unreasonable but that west of the gateways and (on certain rates) west of Kansas City, reparation should be awarded in certain instances. This recommendation is made also in the case of the same commodities originating at the gateways and originating at Kansas City and certain other points. On rates from Topeka to destinations in Oklahoma and Texas, he recommends that reparation be awarded. The defendants in this case are the Atchison, Topeka & Santa Fe and other railroads. A number of other cases are included in the same report.

Supplementary Report on 126 I. C. C. 73

The Interstate Commerce Commission has made public a proposed report by R. G. Taylor, examiner, on rates on iron and steel tank material from eastern points, also from Kansas City, Kan., to destinations in Kansas, Oklahoma and Texas, the case being 126 I. C. C. 73, and the present report recommends modifications of the origonal decision, formulated after a further hearing. The complainant is the Sinclair Crude Oil Purchasing Company and the defendants are various western roads, the report covering also a large number of other complaints. It is recommended that on iron and steel tank material reparation be awarded and that on derrick parts from Neville Island, Pa., and Parkersburg, W. Va., overcharges be refunded, the rates that were

charged being found inapplicable. The rates east of the southwestern gateways on iron and steel articles are found not unreasonable; but west of the southwestern gateways, it is recommended that reparation be awarded.

Proposed Report on Iron and Steel Articles

The Interstate Commerce Commission has made public a proposed report by R. G. Taylor, examiner, on complaints made in 1926 and 1927, concerning rates on iron and steel articles shipped from various eastern points and fabricated in transit at Parkersburg, W. Va. The examiner finds the rates east of Mississippi River gateways not unreasonable but west of the gateways he recommends reparation in certain instances; and rates are prescribed for the future. This report is on the complaint of the Parkersburg Rig and Reel Company against the Atchison, Topeka & Santa Fe, et al. To a previous proposed report exceptions were filed and the proceedings were reopened.

Supplementary Report on 100 I. C. C. 173

The Interstate Commerce Commission has made public a proposed report by R. G. Taylor, examiner, on the complaint of Atlas Metal Works, et al. against the Akron, Canton & Youngstown, et al concerning iron and steel articles from eastern points to Dallas, and other points in Texas. Following the former report, the case was reopened solely with respect to reparation. The examiner now recommends modification of certain parts of the report and that reparation be awarded. On that portion of the rate east of the southwestern gateways, he finds nothing unreasonable, but beyond the gateways recommends that reparation be awarded in certain instances.

The examiner would re-affirm the former report, 115 I. C. C. 327, sustaining the existing rates on iron and steel rods from Marion, Ind., to certain southwestern destinations. This report also embraces certain complaints of the Nash Hardware Company and others.

Equipment and Supplies

Locomotives

THE GREAT NORTHERN is inquiring for two electric locomotives.

THE SOUTH BUFFALO is inquiring for three eight-wheel switching locomotives.

THE AMERICAN ROLLING MILL COMPANY, Ashland, Ky., has ordered two 300-hp. oil-electric locomotives from the manufacturing collaborators—the Ingersoll-Rand Company, the American Locomotive Company and the General Electric Company.

THE WESTERN ELECTRIC has ordered for use in its Balimore, Md. plant from the Westinghouse Electric & Manufacturing Company, a 300-hp. oil-electric switching locomotive, similar to the locomotive described in the *Railway Age* of April 6.

Freight Cars

THE CENTRAL OF GEORGIA is inquiring for 50 flat cars.

THE BIRMINGHAM SOUTHERN, is inquiring for 25 all-steel box cars of 50 tons' capacity.

THE CENTRAL OF NEW JERSEY has ordered 200 gondola cars 65 ft. long and of seventy tons capacity from the Bethlehem Steel Company. Inquiry for this equipment was reported in the *Railway Age* of June 1.

THE DELAWARE, LACKAWANNA & WESTERN has ordered 700 steel box cars of 55 tons' capacity and 250 steel hopper cars of 70 tons' capacity from the American Car & Foundry Company, and 300 steel box cars of 55 tons' capacity from the Magor Car Corporation. Inquiry for this equipment was reported in the *Railway Age* of June 22.

Passenger Cars

THE NEW YORK, NEW HAVEN & HARTFORD is now inquiring for five oil-electric rail motor cars.

THE DELAWARE, LACKAWANNA & WESTERN has ordered two steel conbination mail and baggage cars 60 ft. 9 in. long with 15-ft. mail compartment from the American Car & Foundry Company. Inquiry for this equipment was reported in the *Railway Age* of June 22.

Machinery and Tools

THE TEXAS & PACIFIC has ordered from Manning, Maxwell & Moore, Inc., one Thompson Grinder Company's 12 in by 36 in. Universal grinder.

THE MISSOURI PACIFIC has ordered from Manning, Maxwell & Moore, Inc., for its Sedalia, Mo., shops a Putnam 54 in. motor driven tire turning lathe, and for its St. Louis shops a Micro Machine Company's motor driven portable locomotive crank pin grinder, for the Gulf Coast and International-Great Northern, three Bridgeport Safety Emery Wheel Company's No. 5-A.C. motor driven floor grinders, and one Defiance 36 in. motor driven drilling machine.

Signaling

THE CHICAGO, BURLINGTON & QUINCY has ordered from the General Railway Signal Company a dispatching machine, 8 working levers, to be installed at Grand Crossing, Wis., for the operation of switches and signals at Harrington Junction, Wis., taking the place of mechanical interlocking now in use at Harrington Junction.

THE AMERICAN LOCOMOTIVE COMPANY has ordered from the General Railway Signal Company 15 sets of apparatus for automatic train control to be used on locomotives being built for the Michigan Central.

THE AMERICAN LOCOMOTIVE COMPANY has ordered from the General Railway Signal Company ten sets of automatic train control apparatus for locomotives being built for the Cleveland, Cincinnati, Chicago & St. Louis.

THE MICHIGAN CENTRAL has contracted with the General Railway Signal Company for the installation of car retarders at its westbound yard, West Detroit, Mich.; 17 retarders, 31 skates, 35 switch machines, power and other equipment.

THE CITY OF PHILADELPHIA has contracted with the Union Switch & Signal Company for the installation of automatic block signals, automatic train stops and electro-pneumatic interlocking for the South Broad street subway. There will be four tracks from Lombard street to the City Hall, and two tracks from the City Hall to Girard avenue. The interlocking at Walnut street will have 43 levers. This whole contract is in the nature of an extension of the existing electro-pneumatic signal system in the North Broad street subway.

Car Retarders for Potomac Yard

The Richmond, Fredericksburg & Potomac has contracted with the Union Switch & Signal Company for the installation of electro-pneumatic car retarders in the northbound yard at Potomac Yard, (Alexandria) Va.; 30 retarders, 47 switches and 46 skates. The installation of car retarders will necessitate certain rearrangement of tracks, and at the same time a track scale will be installed, and the estimated cost of the entire project is $548,500.

An order has been given also to the Union Company for color-light signals to be installed in place of semaphores between Richmond and Doswell and for similar signals at other places, all of which total an estimated cost of $43,000. When these installations are finished, the entire line of the road will be equipped with color-light signals.

The Cost of the extension of automatic train control at the northern and southern end of the road will involve an estimated cost of $25,000.

Miscellaneous

THE DELAWARE, LACKAWANNA & WESTERN has ordered 4,773,000 ft. of cable, weighing 1,610 tons, for use in connection with the electrification of 70 miles of road or 160 miles of track in the northern New Jersey suburban zone. The successful bidders were: Anaconda Wire & Cable Company, New York; Bridgeport Brass Company, Bridgeport, Ct.; American Electrical Works, Phillipsdale, R. I. and Standard Underground Cable Company, New York.

Supply Trade

William E. Dunbar, has been appointed Southeastern sales engineer of the **Graver Corporation,** East Chicago, Ind. His headquarters will be at Jacksonville, Fla.

C. A. Lyon, sales engineer of the **Standard Automatic Signal Corporation,** Chicago, has resigned to become signal and electrical engineer for the **Kahler Company,** Burbank, Cal.

F. R. Cothran, chief engineer of the Piedmont & Northern with headquarters at Charlotte, N. C., has resigned to become vice-president and general manager of the **Beauharnois Construction Company,** Beauharnois, Que.

The general offices of the **Standard Auto-Tite Joints Company,** Pittsburgh, Pa., have been moved from the Park building to a newly opened plant at 916 Forbes street. **Norman Allderdice,** president, retains offices in the Park building, while **A. M. Frauenheim,** vice-president and general manager, is located at the Forbes street plant. **E. H. Mattingley,** 804 Railway Exchange building, Chicago, has been appointed representative in the Chicago district, and **H. W. Barhyte** formerly with the Southern Wheel Company, has been appointed to a similar position in the New York district.

Henry Gardner, for many years in railroad service, has been appointed vice-president in charge of sales of the **Coppus Locomotive Equipment Company,** Worcester, Mass. He was born in Salem, Mass., and graduated from the Massachusetts Institute of Technology in 1896. In the same year he began railroad work as special apprentice in the Boston & Maine shops at Boston, Mass. Later he was appointed shop draftsman and inspector at Concord, N. H., becoming assistant master mechanic at Concord in 1904. Subsequently he became locomotive designer for the H. K. Porter Company, Pittsburgh, Pa., and chief draftsman of the Pittsburgh & Lake Erie. From 1908 to 1914 he was supervisor of shop systems and supervisor of apprentices on the New York Central lines. In 1914 Mr. Gardner left New York to become assistant superintendent of shops on the Baltimore & Ohio at Baltimore, Md. Since 1916 he held respectively on the Baltimore & Ohio the positions of supervisor of material conservation, corporate mechanical engineer, and special engineer on the staff of the chief of motive power and equipment.

C. E. Leach, assistant manager of sales has been elected a director and secretary and treasurer of the **New York Air Brake Company,** New York, to succeed R. B. Sheridan, resigned. Mr. Leach has served the company in many important capacities since its incorporation in 1890 being successively purchasing agent, general manager, a director for one year, sales representative and assistant to the vice-president and manager of sales. **C. B. Lesser,** comptroller, has been elected vice-president of the company also retaining his office as comptroller. Prior to joining

C. E. Leach

with the company in 1920 Mr. Lesser was engaged in industrial engineering work for large manufacturing companies including those with large contracts for government munitions during the war period. He also assisted in laying out the airplane factory at Teterboro, N. J., now used as an airport. He

C. B. Lesser

also has specialized in factory and administrative accounting. He is a member of the Society of Industrial Engineers, the National Association of Cost Accountants, the National Association of Office Managers and the Lawyers Club.

Harry S. Peck, sales representative of the **Edison Storage Battery Company,** with headquarters at Chicago, has been promoted to manager of western railroad sales with the same headquarters. Mr. Peck was born on March 27, 1889 at Roy, Mont., and graduated from the Montana State College in 1911. He began his railway career in 1915, when he entered the employ of the Chicago, Mil-

Harry S. Peck

waukee & St. Paul as an electrical inspector. Two years later he entered the service of the United States Army Engineers as a commissioned officer. Following the termination of his war service he became a sales engineer for A. H. Cox and Company, Seattle, Wash., which position he held until 1922, when he returned to the Milwaukee as a draftsman. Two years later Mr. Peck was placed in charge of train lighting on the Milwaukee and in 1925 was promoted to supervisor of locomotive and power plant operation. In November, 1927, he resigned from this position to become a sales representative of the Edison Storage Battery Company, which position he has held until his recent promotion.

Don C. Wilson has been appointed assistant to the president of the **E. A. Lundy Corporation** with headquarters at New York and **W. F. Bauer** has been appointed western manager for the company with headquarters at Chicago. Mr. Wilson was educated in the Public Schools of Broken Bow, Neb., and the Nebraska State University, completing his course in electrical engineering in 1907, after which he engaged in electrical work with the Stone & Webster Construction Company at Seattle; the U. S. Navy Yard, Bremerton; the Pacific Gas & Electric Company, Los Angeles; the Independent Telephone Company, Omaha; the Union Pacific at Omaha; Central of Georgia at Savannah and the Delco Light Company of Chattanooga. In 1920 he became assistant sales manager for the Edison Storage Battery Company in charge of the railway department later becoming general sales manager of that company which position he held at the time of his affiliation with the E. A. Lundy Company. Mr. Bauer has had a wide railway experience with the Pullman Company as electrical foreman at Jersey City, N. J.,

with the Missouri Pacific as chief electrician at St. Louis, Mo., with the Electrical Storage Battery Company, as sales engineer and with the U. S. L. Light & Heat Corporation, as western railroad

Don C. Wilson

manager. Until recently he occupied the position of western railroad manfor the Edison Storage Battery Company. Mr. Bauer is a past president of the Railway Electrical Supply Manufac-

W. F. Bauer

turers' Association and is now president of the Railway Electrical Pioneers' Club. He will have charge of the new offices of the E. A. Lundy Corporation recently opened at 1809 Engineering building, Chicago.

Obituary

Edward J. Hurst, general sales manager of the J. J. Newman Lumber Company, Brookhaven, Miss., and Homochitto Lumber Company, died suddenly of heart trouble at his home in Brookhaven on August 5. Mr. Hurst was born at Scranton, Pa. He became connected with the United States Lumber Company interests and J. J. Newman Lumber Company, both of Scranton, and in 1912 was sent to Hattiesburg, as sales manager of the Newman Company. In 1917 the general sales office was moved to Brookhaven and Mr. Hurst resided there since that time. He was active in the affairs of the Southern Pine Association.

Construction

CANADIAN NATIONAL.—This company will construct a passenger station 154 ft. x 45 ft. at Wainwright, Alta.

CANADIAN PACIFIC.—A contract for the construction of a bridge over the Nicola river has been awarded to the Sidney E. Junkins Company, Limited. Ellis Cotton, Limited, has been awarded the contract for grading approaches while a contract for the steel superstructure has been let to the Hamilton Bridge Company, Limited. The approximate cost is $250,000.

CHESAPEAKE & OHIO.—A contract has been awarded to the Graver Construction Corporation, East Chicago, Ind., for the construction of a settling tank, 40 ft. in diameter by 43 ft. high with a downtake 12 ft. in diameter, at Boston, Ind.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—Contracts have been awarded the Howlett Construction Company for the construction of six coaling stations located at Calmar, Ia., Algona, Sanborn, Cedar Rapids, Ebner, Ill., and Terre Haute, Ind.

CHICAGO & NORTH WESTERN.—This company has awarded a contract to the Graver Corporation, East Chicago, Ind., for the construction of three water softening plants, the sizes and locations being as follows: Clyman Junction, Wis., 20,000 gal. per hour with additional storage for 60,000 gal.; South Janesville, Wis., 15,000 gal. per hour with additional storage for 35,000 gal., and Jefferson Junction, Wis., 12,500 gal. per hour, with additional storage for 50,000 gal. A contract has also been placed with this company for an additional tank 21 ft. in diameter by 52 ft. high to enlarge the capacity of the softener at Boone, Ia., and thereby increase the capacity from 23,000 gal. to 46,000 gal. per hour.

CHICAGO, ROCK ISLAND & PACIFIC.—A contract has been awarded to the T. S. Leake Construction Company for the construction of extensions to the 12-stall roundhouse at Forty-seventh street, Chicago. Contracts have been awarded the Railroad Water & Coal Handling Co. for the construction of a 30,000 gal.-per-hour capacity water treating plant at Jefferson, Okla.; the construction of a 20,000 gal. per hour capacity water treating plant at Whitewater, Kans., and the construction of oil storage facilities at Grover, Tex.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—A contract has been awarded the Railroad Water & Coal Handling Co. for the construction of a 15,000 gal-per-hour capacity pumping station at La Crosse, Wis.

DELAWARE & HUDSON.—The New York Public Service Commission has under consideration plans for the elimination of two grade crossings on this company's lines, one in Essex, N. Y., and the other in Westport. The railway and State Department of Public Works have agreed in the case of the crossing in Essex, but in the case of the Vails crossing in Westport, there has been a division of opinion resulting in the suggestion that the department prepare a new set of plans to overcome the main objections set forth by the railway company. The cost of the proposed elimination under the railway's plan is $120,000. The railway company also is planning to double track its line at this point.

DAVENPORT, ROCK ISLAND & NORTHWESTERN.—A contract has been awarded the Howlett Construction Company, Moline, Ill., for the construction of a 65-ton automatic coaling station at Davenport, Ia.

LOUISVILLE & NASHVILLE.—The Board of Public Works at Louisville, Ky. has approved plans submitted by this railroad for an underpass at Third and K streets in that city.

NASHVILLE, CHATTANOOGA & ST. LOUIS.—A contract has been awarded to the Southern Ferro Concrete Company for the construction of a passenger station at Atlanta, Ga., to cost approximately $575,000.

NEW YORK CENTRAL.—This company has awarded a contract to the Bates & Rogers Construction Company, New York, for the elimination of the Harlem avenue grade crossing on its lines in Cheektowaga, N. Y. The elimination project is to cost about $165,600 and will be begun at once.

NORTHERN PACIFIC.—A contract has been awarded the Howlett Construction Company, Moline, Ill., for a complete set of machinery for a 100-ton coaling plant.

PENNSYLVANIA.—This company has awarded contracts for construction work totalling approximately $743,000 on its lines as follows: To the Vare Construction Company, Philadelphia, for the construction of foundations for the catenary system in connection with electrification work between Fifty-second street, Philadelphia, and Franklin avenue, Norristown, Pa., $315,000; to the T. J. Foley Company, Pittsburgh, for the construction of an undergrade bridge at Haws crossing and the extension of Stone Arch bridge over the Conemaugh river at Johnstown, Pa., $145,000; to the Vare Construction Company, Philadelphia, for the construction of a sub-station at West Philadelphia and of a transmission line between this substation and North Philadelphia in connection with the electrification program between Philadelphia, Pa., and Trenton, N. J., $100,000; to Di Nella Brothers' Company, Pittsburgh, for the construction of an overhead bridge to eliminate a highway grade crossing at Canawaugus,

N. Y., $65,000; to the F. H. McGraw Company, New York, for the re-location of break-bulk l. c. l. freight facilities in connection with warehouse and freight terminal improvements at Jersey City, N. J., $50,000; to the James McGraw Company, Philadelphia, for the construction of an overhead bridge to eliminate a highway grade crossing at Fishing Creek road in Rockville, Pa., $42,000; and to John J. Higgins, Waverly, N. Y., for the construction of an undergrade bridge for the elimination of a highway grade crossing in Canandaigua, N. Y., to cost $26,000.

RICHMOND, FREDERICKSBURG & POTOMAC.—This company plans the necessary rearrangement and grading of tracks in its northbound classification yard at Potomac Yard, Va., in connection with the installation of its new car retarder system. The total estimated cost of the project including the retarder system is $548,500.

SOUTHERN.—Bids will be opened on September 3, for the construction of second track on nine miles between Blanchet, Ky., and Sadieville.

ST. LOUIS-SAN FRANCISCO.—A contract has been awarded the Kershaw Construction Company, Birmingham, Ala., for the construction of a passenger station at Aberdeen, Miss.

SOUTHERN PACIFIC.—This company is planning the construction of an employees tuberculosis sanitarium at Tucson, Ariz., to cost $200,000.

SOUTHERN PACIFIC AND TEXAS & PACIFIC.—An ordinance requiring the Southern Pacific and the Texas & Pacific to construct six viaducts in El Paso, Tex. to relieve the local crossing problem, was formulated on August 14 and September 19 was set as the date for final action.

VIRGINIAN & WESTERN.—Bids will be opened on September 7, for the construction of a 13-mile extension including four tunnels from Mullens, W. Va., to a point near the Guyandot river.

UNION PACIFIC.—This company is planning the construction of an engine house and shop facilities at Cheyenne, Wyo.

UNION PACIFIC.—This company is planning the construction of a passenger station at Julesburg, Col., to cost $80,000.

WABASH.—Bids will soon be accepted for a 120-ft. reinforced concrete double track bridge over Kings highway Northwest at St. Louis, Mo.

PROPERTY MARKING SYSTEMS—Premax Products, Inc, Niagara Falls, New York has issued a 24-page bulletin which contains an article by Frank S. Wahl, superintendent of the Tonawanda Tower Company on the use of Premax aluminum figures and letters for identifying electric poles, lamp posts, signal masts, bridges, tool houses, etc. The bulletin also contains information on the sizes and styles of these numbers and letters and on the methods of application.

Railway Finance

ATLANTIC COAST LINE.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to have certified and delivered to it $6,576,035 of general unified mortgage bonds, series A, to be held temporarily in its treasury.

BALTIMORE & OHIO.—*Bonds.*—Subsidiaries of this company listed below have applied to the Interstate Commerce Commission for authority to issue bonds to be delivered to the Baltimore & Ohio in payment for advances to the amounts shown, all bearing interest at 6 per cent: Baltimore & Philadelphia, $55,500; Pittsburgh & Western, $533,500; Ohio & Little Kanawha, $101,000; Wheeling, Pittsburgh & Baltimore, $224,000; Fairmont, Morgantown & Pittsburgh, $153,000.

BRIDGTON & HARRISON.—*Operation and Securities.*—The Interstate Commerce Commission has authorized this company to acquire and operate the narrow-gage line of the Bridgton & Saco River, 21.2 miles and to issue $35,000 of capital stock at par. Application for an order from the court in charge of the receivership to permit sale for $27,000 has been made.

CANTON COMPANY.—*Ownership.*—The Western Maryland has petitioned the Interstate Commerce Commission to reopen this company's increased switching charge case and to investigate the ownership of this property to disclose who the owners are.

EAST KENTUCKY SOUTHERN.—*Stock.*—The Interstate Commerce Commission has authorized this company to issue $50,000 of capital stock to be issued at par in connection with expenditures made for acquisition and rehabilitation of its railroad.

GULF, MOBILE & NORTHERN.—*Bonds.*—The Interstate Commerce Commission has authorized this company to procure authentication and delivery of $2,300,000 of first mortgage 5 per cent bonds, series C, in respect of capital expenditures.

KENTUCKY & INDIANA TERMINAL.—*Bonds.*—The Interstate Commerce Commission has authorized this company to procure the authentication and delivery of $511,000 of first mortgage 4½% per cent bonds to be held in its treasury in reimbursement for capital expenditures.

MISSISSIPPI SOUTHERN.—*Abandonment.*—This company, through the trustee for the lumber company which owns it, has applied to the Interstate Commerce Commission for authority to abandon its 49.7-mile line from Lumberton to Kiln, Miss.

MISSOURI PACIFIC.—*Bonds.*—The New Orleans, Texas & Mexico has applied to the Interstate Commerce Commission for authority to issue from time to time and pledge $1,955,000 first mortgage 4½ per cent bonds, series D, maturing 1956, for expenditures which have been made by the applicant and controlled companies for capital purposes.

NEW YORK, NEW HAVEN & HARTFORD.—*Dividend Increase.*—The directors of this company have voted to raise the annual dividend rate on the stock of this company from $4 to $5.

PENNSYLVANIA.—*Bonds.*—The Interstate Commerce Commission has au horized the United New Jersey Railroad and Canal Company to issue $5,020,00 of general mortgage 4½ per cent bonds, to mature in 1979, which will be delivered to the Pennsylvania at par in reimbursement for a maturing issue of like amount.

PITTSBURG, SHAWMUT & NORTHERN.—*Final Valuation.*—The Interstate Commerce Commision has found a final value for rate-making purposes of $7,512,000 for common carrier property owned and used by this company and for use but not owned $835,000. Property of the Clarion River, owned but not used is placed at $177,000 and of the Kersey Railroad, $419,000.

QUANAH, ACME & PACIFIC.—This company has applied to the Interstate Commerce Commission for authority to construct an extension from Matador, Tex., to North Peace River, 15 miles.

SEABOARD AIR LINE.—*Bonds.*—The Prince George & Chesterfield has applied to the Interstate Commerce Commission for authority to issue $450,000 of first mortgage 25-year 6 per cent bonds in addition to a like amount previously issued and to sell both issues to the Seaboard at par.

Average Prices of Stocks and of Bonds

	Aug. 27	Last week	Last year
Average price of 20 representative railway stocks.	159.99	158.46	121.78
Average price of 20 representative railway bonds..	89.73	89.86	92.93

Dividends Declared

Alabama & Vicksburg.—3 per cent, semi-annually, payable October 1 to holders of record September 6.

Chesapeake & Ohio.—Common, 2½ per cent, quarterly, payable October 1 to holders of record September 6; Preferred, 3¼ per cent, payable January 1, 1930, to holders of record December 6.

Consolidated Railroads of Cuba.—Preferred, 1½ per cent, quarterly, payable October 1 to holders of record September 10.

Cuba Railroad.—Common, $1.20, quarterly, payable September 27 to holders of record of the same date.

Hocking Valley.—Common, 2½ per cent, quarterly, payable September 30 to holders of record September 6.

New York, New Haven & Hartford.—Preferred, $1.75, quarterly, payable October 1 to holders of record September 6.

Pere Marquette.—Common, $1.50, quarterly, payable September 30 to holders of record September 6; Preferred, $1.25, quarterly; Prior Preferred, $1.25, both payable November 1 to holders of record October 4.

Pittsburgh, Youngstown & Ashtabula.—Preferred, 1¾ per cent, quarterly, payable September 3 to holders of record August 20.

St. Joseph, South Bend & Southern.—Common, ½ per cent; Preferred, 2½ per cent, both payable September 16 to holders of record September 15.

St. Louis Southwestern.—Preferred, 1¼ per cent, quarterly, payable September 30 to holders of record September 14.

Vicksburg, Shreveport & Pacific.—Preferred, 2½ per cent, semi-annually; Common, 2½ per cent, both payable October 1 to holders of record September 6.

Railway Officers

Financial, Legal and Accounting

J. A. Commiskey has been appointed assistant secretary of the Mobile & Ohio with headquarters at St. Louis, Mo.

J. L. Ronnow, formerly an employee in the office of the city attorney at Los Angeles, Cal. has been appointed attorney in California for the Los Angeles and Salt Lake unit of the Union Pacific System.

Operating

C. W. Dowdy has been appointed trainmaster of the Norfolk division of the Virginian, with headquarters at Victoria, Va., succeeding **A. A. Kirkman,** who has been assigned to other duties.

Traffic

M. A. Degnan has been appointed general agent of the Chicago, Springfield & St. Louis with headquarters at Memphis, Tenn.

James E. Driscoll, traveling passenger agent of the Great Northern with headquarters at San Francisco, Cal., has been promoted to general passenger agent with the same headquarters.

T. A. Cushman, general agent of the Atchison, Topeka & Santa Fe with headquarters at Clinton, Okla. has been promoted to division freight and passenger agent with the same headquarters.

H. H. Williams, agent for the Pacific Electric at Fullerton, Cal., has been promoted to general agent for the Santa Monica Bay district, with headquarters at Ocean Park, Cal., newly created position.

Edward A. Hynes, assistant general freight agent of the Chicago & Alton with headquarters at Chicago has been promoted to executive general agent with headquarters at St. Louis, Mo., and will be succeeded by **John H. Walkmeyer** general agent at Pittsburgh, Pa.

Mechanical

E. L. Phelps, car foreman of the St. Louis-San Francisco at Oklahoma City, Okla. has been appointed general car foreman with headquarters at West Tulsa to succeed **J. S. Jowers,** resigned.

James Grant, shop superintendent of the Atlantic Coast Line, with headquarters at Tampa, Fla., has been appointed superintendent of motive power, with the same headquarters, succeeding **James Paul,** who has been appointed general superintendent of motive power at Wilmington, N. C.

James Paul, superintendent of motive power of the Atlantic Coast Line, with headquarters at Tampa, Fla., has been appointed general superintendent of motive power, with headquarters at Wilmington, N. C. Mr. Paul was born at Lanarkshire, Scotland in 1869. He entered railroad service in 1885 with a predecessor of the Atlantic Coast Line as car inspector's helper. He was later transferred to the machine shop as an apprentice and remained there until he had completed his time. He then became air brake repairman. Mr. Paul next served as roundhouse foreman and then as general foreman. In 1906 he became master mechanic and in November, 1925, he was promoted to the position of assistant superintendent of motive power. He was appointed superintendent of motive power in March, 1927, which position he held at the time of his recent promotion.

Purchase and Stores

H. C. Pearce, director of purchases and stores of the Chesapeake & Ohio, has also been appointed to a similar position for the Pere Marquette, with headquarters at Cleveland, O.

Special

Herbert L. Baldwin has been appointed assistant publicity manager of the Boston & Maine, with headquarters at Boston, Mass., succeeding **Albert D. Barker,** resigned.

Obituary

Edward S. Kempton who retired as treasurer of the Duluth, Missabe and Northern in 1919, died at Duluth, Minn. on August 21, after a long illness.

James S. Reddoch, former superintendent of the Missouri and North Arkansas, died in Cortes, Honduras, on August 21.

Robert L. Porter assistant secretary of the Chicago and Western Indiana and the Belt Railway of Chicago died in La Grange, Ill. on August 24.

Andrew Broaddus, manager, from 1891 to 1907, of the Cumberland Gap Dispatch which operated over the Louisville & Nashville, died at Louisville, Ky. on August 22.

Thomas J. Frazier, who was in charge of the engineering work incident to the construction of the Chicago division of the Baltimore & Ohio in 1871 and who later headed the maintenance of way, real estate and tax departments of this railroad at Chicago, died at Tiffin, Ohio on August 19 following a long illness.

J. D. Reid, former Canadian minister of railways and canals, died at his home in Prescott, Ont., on August 26 after a short illness. He was born in Prescott on January 1, 1859, and received his education at Queen's University, Kingston, and Trinity College, Toronto. For several years he was manager of the Edwardsburgh Starch Company and the Imperial Starch Company. He was then elected to the House of Commons. In October, 1911, Mr. Reid was appointed minister of customs in Sir Robert L. Borden's cabinet and upon the reorganization of the cabinet on a Unionist basis in October, 1917, he was appointed minister of railways and canals. He retired from the cabinet in September, 1921, and shortly thereafter was appointed to the Senate.

Charles B. Rodgers who retired as general manager of the Davenport, Rock Island & North Western with headquarters at Davenport, Ia., in 1927, died on August 19 following an extended illness. He was born on October 4, 1859 at West Point, Ia., and entered railway service in 1874 as a telegraph operator on the Chicago, Burlington & Quincy. During the period until 1915 he served as station agent, roadmaster, trainmaster and superintendent. He resigned from the latter position to become general manager of the St. Louis, Brownsville & Mexico and in 1918 was appointed general manager of the Davenport, Rock Island & North Western, which position he held until his retirement in 1927.

R. D. Hawkins, general superintendent of motive power of the Atlantic Coast Line, with headquarters at Wilmington, N. C., who died on August 7, was born on May 22, 1873 at La Fayette, Ind. He was graduated from the School of Mechanical Engineering at

R. D. Hawkins

Purdue University in 1893, and entered railway service in August, 1899, with the Great Northern as chief draftsman. Later he became mechanical engineer, then general master mechanic and later

assistant superintendent of motive power. He became superintendent of motive power on March 10, 1910, which position he held until October 20, 1917. He then entered military service and was commissioned lieutenant-colonel, being assigned to Russia with the Railway Engineers. While in Russia he was given command of the Mechanical Section of Railway Engineers under the command of Colonel Emerson. Mr. Hawkins returned to the United States on January 5, 1920, and was appointed an assistant to the president of the Great Northern, doing special work in connection with mechanical matters. On September 15, 1920, he was appointed general superintendent of motive power of the Atlantic Coast Line, which position he held until his death.

Oscar S. Major, signal engineer of the Kansas City Southern, who died suddenly at Mulberry, Mo., on August 15 from heart disease, was born in Kansas City, Mo., on December 5, 1894. he re-entered the employ of the Santa He was graduated from the University of Kansas in 1917, but obtained his first railway experience during the summer months of 1916 when he worked as a laborer with a signal construction party on the Atchison, Topeka & Santa Fe Coast Lines. He was chief draftsman in the office of the signal engineer of the Santa Fe from June, 1917, to March, 1918, when he entered army service for a short period during the war. Later he re-entered the employ of the Santa Fe in signal construction work on the Eastern Lines. In October, 1921, he joined the Kansas City Southern as a signal draftsman and continued in this capacity until September, 1925, when he accepted an appointment as junior signal engineer in the Bureau of Signals and Train Control Devices of the Interstate Commerce Commission, being stationed

Oscar S. Major

at Washington, D. C. This was followed by an appointment on April 16, 1926, to the position of senior signal engineer, which position he was holding at the time he resigned to go with the Kansas City Southern as signal engineer on July 31, 1926.

J. M. Brown, assistant to the vice-president of the Chicago, Rock Island & Pacific with headquarters at Chicago, who died in that city on August 19 from pleurisy, was born on April 15, 1860, at Neiltown, Pa. He was educated at the University of Iowa and entered railway service in 1879 as a rodman on the Burlington, Cedar Rapids & Northern (now a part of the Chicago, Rock Island & Pacific). In the following year he became an engineer on construction, which position he held until 1890 when he was appointed assistant engineer maintenance of way. From 1892 to August 22, 1905 he was division engineer of this road and the Chicago, Rock Island & Pacific, which leased the former road on June 1, 1902. On August 22, 1905 he was made district engineer of the Rock Island at Davenport, Ia. which position he held until February 1, 1911 when he became engineer maintenance of way for the Second district.

J. M. Brown

He held this position until November 1, 1918 when he was appointed corporate engineer in charge of maintenance and construction. On March 1, 1920 he was appointed assistant to the vice-president in charge of maintenance and construction and in 1925 was made assistant to the vice-president in charge of operations which position he held until his death.

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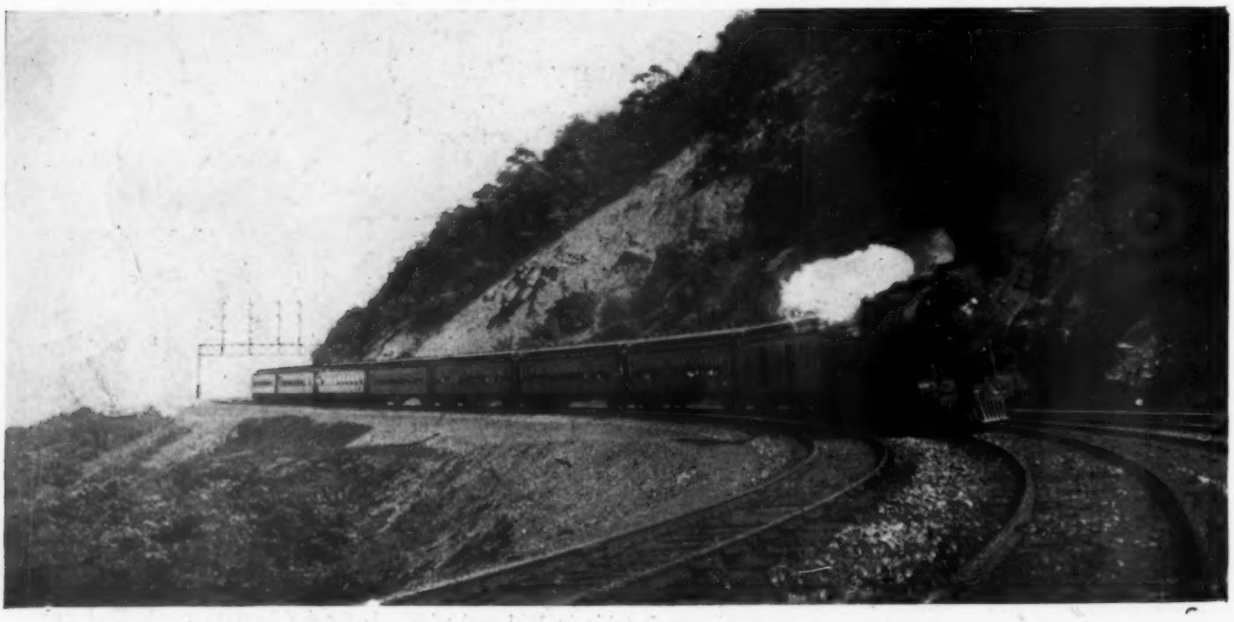

On the Pennsylvania at Horseshoe Curve, Near Altoona, Pa.